DOCUMENT RESUME

ED 131 079 SO 009 605

TITLE Education for Citizenship: A Bicentennial Survey. User Manual for Replicating the Citizenship Survey.

INSTITUTION Education Commission of the States, Denver, Colo. National Assessment of Educational Progress.

SPONS AGENCY National Center for Education Statistics (DHEW), Washington, D.C.

PUB DATE Oct 76

CONTRACT OEC-0-74-0506

NOTE 100p.

EDRS PRICE MF-$0.83 HC-$4.67 Plus Postage.

DESCRIPTORS Answer Keys; *Citizenship; Cognitive Measurement; Data Analysis; *Educational Assessment; Elementary Secondary Education; Evaluation Methods; *Guidelines; Knowledge Level; Manuals; Measurement Instruments; *Public Affairs Education; Student Evaluation; *Surveys; Tables (Data); Test Construction

IDENTIFIERS *Bicentennial

ABSTRACT

Procedures for assessing citizenship education among 13-year-old and 17-year-old students are outlined. The document is designed to be used by over 1,600 district and school personnel who have the responsibility for conducting assessments using the National Assessment of Educational Progress guidelines (NAEP). It provides information on the assessment process, performing assessment tasks, and analyzing assessment results. Topics discussed in the 12 chapters include looking at requirements for replicating the NAEP survey; setting an assessment schedule; selecting students to be assessed; performing preassessment tasks, assessment tasks, and postassessment tasks; scoring assessment booklets; and analyzing results and comparing them with NAEP data. Teachers are instructed to follow manual directions closely so that differences between individual students and the national sample will be the result of "real" causes rather than inconsistent assessment procedures. Five appendices include a discussion on survey sampling; scoring guides; listing of assessment questions, answers, themes, and objectives; citizenship objectives; and definitions of National Assessment reporting groups. (Author/DB)

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EDUCATION FOR CITIZENSHIP: A BICENTENNIAL SURVEY

USER MANUAL
FOR
REPLICATING THE CITIZENSHIP SURVEY

SP009605

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October 1976

A Project of the

Education Commission of the States

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Contract Agency:
NATIONAL CENTER FOR EDUCATION STATISTICS

Contract No. OEC-0-74-0506

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CHAPTER 1

INTRODUCTION

This manual is designed for district and school personnel who have the responsibility for conducting an assessment using NAEP's EDUCATION FOR CITIZENSHIP: A BICENTENNIAL SURVEY.

Since this assessment kit is being made available to over 1600 districts and schools it is difficult to define a uniform set of procedures that would apply to everyone. Some districts and schools have been conducting assessments for a number of years. For others, this may be a first assessment effort. Some districts have testing and evaluation staffs already trained to carry out an assessment. For others, conducting this assessment will require that a considerable amount of additional time and effort be placed on an already overloaded staff. We tried to keep all of these factors in mind as this manual was developed and we hope it has something to offer to each of you.

The chapters in this manual are organized in the order in which you will be conducting your assessment. We suggest that you first review the entire manual from cover to cover. Then, re-examine in more depth those chapters that raise questions in your mind. Depending upon the number of people assigned to your assessment effort, you may want to reproduce extra copies of certain chapters or perhaps the entire manual.

The primary focus of the manual is to highlight the requirements for replicating the NAEP model for assessment. If you plan to conduct your assessment so that comparisons of your students' performance levels can validly be made to the NAEP results, it is very important that you follow these requirements. When you make your final data comparisons and discover differences between your students and the national sample, you will want to feel confident that these differences are "real", and not a result of using different assessment procedures.

As stated in the Q & A brochures that are included in the assessment kit, NAEP will not be able to provide additional assistance in helping you organize and conduct your assessment. While we would like to provide a more personalized service, our staffing limitations will not allow us to do so.

In a few months, we will be sending a questionnaire to solicit your comments on the utility of this citizenship assessment kit. We hope you jot down any problems you encounter in using the assessment booklet, cassette tape or this manual so that when the questionnaire arrives, you will be able to give us a candid evaluation of the kit's strengths and weaknesses.

CHAPTER 2

BECOMING FAMILIAR WITH THE ASSESSMENT BOOKLET

The booklet in your assessment kit is identical to the ones used by NAEP in the 1975-76 survey. You may have already noticed several design and layout features that make the booklet appear quite different from other tests you have administered. Some of these features will be important to your assessment activities and will be covered in detail in different chapters of this manual. Other features are unique to NAEP's printing and scoring requirements and you will not have to be concerned with them. Take a few moments to become more familiar with the booklet by following the steps below:

- First, look carefully at the cover page. If you requested an assessment kit for 13-year-olds, you should have a booklet labeled "Package No. 9, Year 07, Age Class 2." If you requested a kit for 17-year-olds, the booklet should be labeled "Package No. 9, Year 07, Age Class 3." While most of the questions in both booklets are identical, there are a couple of items in the 17-year-old booklet that are not in the 13-year-old booklet. These differences will be discussed later.

- At the bottom of the cover page are several sets of boxes and ovals that NAEP used for recording the students' grade, sex, birthdate, race, etc. You also may find it convenient

to code information for your students in this section. The coding of this information will be covered in later chapters of this manual.

- On pages 2 and 3 are example questions (exercises) that the students should complete before beginning the actual assessment questions. The purpose of these example questions is to acquaint the students with both multiple-choice and open-ended formats, to stress that only one answer oval be filled in for each question and to introduce them to the use of the "I don't know" response choice.

- The survey questions begin on page 4. All questions in the booklet are multiple-choice except question number 12 on page 15. This question will involve a more extensive scoring effort and will be discussed later.

- Notice that only one question is printed per page. NAEP has followed this format in all previous assessments so that students will concentrate on one question at a time. Since results are reported for each question it is important that students be given an ample opportunity to respond without being influenced by seeing easier or harder questions that may be coming up. The stop signs in the lower right-hand corner of each page, plus the instruction, "DO NOT CONTINUE UNTIL TOLD TO DO SO", are intended to discourage the students from working ahead in the booklet.

- On pages 38 and 39 of the 13-year-old booklet (Age Class 2) you will see information labeled "Sources" and "Exercise Documentation". This was for NAEP's use only and you will not need to be concerned with these two pages.

- The back page of the booklet contains several questions concerning the home environment of the student, eg., receiving newspapers and magazines, number of books and encyclopedias in the home, father's and mother's education, and place of residence on student's 9th or 13th birthday. NAEP will provide information on the national sample of 13- and 17-year-olds for questions 5 and 6 only: "How much school did your (father) (mother) complete?" You may want to ask your students the other questions as well, but keep in mind that no NAEP data will be available.

- The booklets were designed to be machine-scored by NAEP for the 1975-76 survey. No separate answer sheets were used. The black lines that appear along the stapled edge of each page were for NAEP's scoring specifications and you need not be concerned with them. The chapter on scoring will suggest how you might proceed with your scoring tasks.

- You may also have noticed the oval sets that appear in the lower left-hand corner of each page. These were for NAEP's use only.

We recommend that you block out the NAEP logo on the cover page before reproducing the booklets. This will minimize possible misunderstandings that your assessment efforts are under the auspices of National Assessment. NAEP did receive clearance from the Office of Management and Budget (OMB) to administer the booklets nationwide and the expiration date, as noted on the cover, is September 30, 1976. This expiration date does not apply to your use of the booklets. You may want to redesign the entire cover page so that it is readily identified as <u>your</u> citizenship survey.

CHAPTER 3

BECOMING FAMILIAR WITH THE CASSETTE TAPE

The cassette tape is designed to be used in conjunction with the booklets during the assessment. Whether you requested a survey kit for 13-year-olds or 17-year-olds or both, your kit should contain only one tape. One side of the cassette tape is labeled "PACKAGE NO. 9, AGE CLASS 2, 13-YEAR-OLDS" and the other side is labeled "PACKAGE NO. 9, AGE CLASS 3, 17-YEAR-OLDS". It is important that you use the correct side of the cassette tape for the particular age-level assessment you will be doing.

This tape recording procedure is used by NAEP for nearly all of its assessments. A professional announcer reads each question to the students as they follow along in the booklet. After each question is read, a silent pause appears on the tape and allows the students time to mark their answers. Once the tape is started, the announcer provides instructions to the students beginning on page 2 of the booklet and leads them through the entire booklet.

The questions on the last page of the booklet concerning the number of magazines or books in the home, the level of parental education, etc., <u>are not</u> presented on the tape since the test administrator may need to clarify or help the students select the most appropriate response. There are several advantages to using the tape for your assessment:

- By using the tape you will know that your students were assessed under the same conditions as the NAEP assessment conditions. This is important in order to make accurate

data comparisons. The tape will also help to ensure standardization should you administer the survey in more than one setting.

- Since the tape paces the presentation of each question you have control over the total length of the assessment period. All students begin and end at the same time. Students who have a tendency to rush through a test in order to leave the testing site early are discouraged from doing so. Therefore, distractions during the assessment period are held to a minimum.

- The announcer serves as a test administrator "heard but not seen". Since no student questions are permitted once the tape presentation begins, your test administrator is completely free to observe and monitor.

- The use of the tape recording in conjunction with the booklet most likely will be a unique experience for your students. NAEP receives many comments from students who say, "Gee, this was fun. It really didn't seem like a test at all."

- During a testing situation it is desirable to have the students do their best. Since citizenship is being assessed, you want to collect information on their knowledge of the citizenship questions. Poor readers may be at a disadvantage in responding correctly, not because of their lack of knowledge concerning the citizenship questions

but because of their lack of understanding of the questions due to their reading handicap. The tape may, therefore, provide these students with a better understanding of each citizenship question.

As a next step, listen to the cassette tape and follow along in the booklet. The tape begins with the announcer saying "NOW OPEN YOUR BOOKLETS TO PAGE 2." After reading the example exercises, he proceeds to direct you through the booklet.

IMPORTANT: Before using your tape for an assessment, make sure the cassette is properly labeled. This can readily be checked by listening to the announcer as he reads the directions on page 2. The example question (exercise) for 13-year-olds is "How many days are there in one week?" The example question for 17-year-olds is "The Mississippi is a major river located in which one of the following countries?"

When all of the questions have been completed, the announcer says, "STOP. NOW CLOSE YOUR BOOKLET AND LISTEN CAREFULLY FOR FURTHER DIRECTIONS." At this point the test administrator would ask the students to complete the questions on the back page.

It should be pointed out that your tapes do not have an introduction for the students stating what the survey is about and why they are being assessed. The standard NAEP introduction is not included on your tapes because it would not be totally appropriate for your survey situation. You may want to prepare some introductory comments that the test administrator could read to the students prior to beginning the tape presentation.

The total tape time for the 13-year-olds' presentation is approximately 36 minutes. The 17-year-olds' tape presentation runs for 30 minutes.

CHAPTER 4

OVERVIEW OF REQUIREMENTS FOR REPLICATING THE NAEP SURVEY

Should you decide to replicate NAEP's procedures in order to make valid comparisons between your students and those students in the national survey, there are certain requirements that you will need to follow. In summary, a NAEP replication during the 1976-77 school year will require you to:

- Assess your 13-year-olds sometime during October-December 1976.
- Assess your 17-year-olds sometime during March-April 1977.
- Reproduce the booklets in ample quantity so that each student has his/her own booklet and answers each question directly in the booklet.
- Use the cassette tape for the assessment. (Reproduce additional tapes if necessary.)
- Score the questions according to NAEP's scoring keys and guides.

Each requirement is discussed in more detail in chapters that follow. Any deviations you make from the required procedures could possibly destroy your ability to make valid comparisons to the NAEP data. Therefore, the procedures should be followed carefully.

CHAPTER 5

SETTING YOUR ASSESSMENT SCHEDULE

If you plan to conduct your assessment during the 1976-77 school year, the 13-year-old students should be assessed sometime during October-December 1976. This assessment period will assure that your 13-year-olds were surveyed during the same time of the school year as the national sample. Conducting your assessment at a later time could jeopardize the data comparisons because of your students' exposure to additional schooling. A mid-November assessment period would be ideal.

The 17-year-old students should be assessed sometime during March-April 1977.

CHAPTER 6

SELECTING STUDENTS TO BE ASSESSED

Eligibility of students assessed by NAEP is determined by age-criteria, not grade-criteria. Thus, 13- and 17-year-olds are selected for assessment without regard to their grade-level. If you plan to assess your 13-year-olds this fall or your 17-year-olds next spring, the NAEP age-eligibility definitions are:

13-year-olds:	Any student born January 1, 1963-December 31, 1963
17-year-olds:	Any student born October 1, 1959-September 30, 1960

There are three exceptions to the above age-eligibility definitions:

- educable mentally retarded (EMR) students
- functionally disabled students
- non-English speaking students

NAEP does not assess any students that fall into any one of these categories so they should not be assessed by you. NAEP does not provide detailed criteria for determining whether a student should not be assessed but rather relies on school personnel to exclude such students.

For this special citizenship assessment survey, NAEP will be reporting both age-level and grade-level results in an attempt to provide national student data that is maximally useful to districts and schools. This means that age data will be reported for 13- and

17-year-old students regardless of grade-level. In addition, data will be reported for 13-year-olds who were in the 8th grade and for 17-year-olds who were in the 11th grade. While this data does not completely sample the 8th or 11th grade students (only 13- or 17-year-olds are included) it does open the door for you to conduct a grade-level assessment by following special procedures. A major requirement of these procedures is for you to identify your 8th and/or 11th grade students by age so that the survey results for your 13- and 17-year-olds within these grades can be isolated and computed separately during analyses of your data.

In summary, you have the option of selecting students according to an age or grade definition. Both plans have advantages and disadvantages and you will need to decide which plan is most appropriate in light of your particular situation and needs. Assessing strictly by age (13 and/or 17) will give you a true NAEP replication and will permit you to compare your students directly to the national sample. However, this procedure may prevent assessing students within their classrooms because the selected students will be coming from several different grade-levels.

Assessing by grade (8th and/or 11th) also will allow you to make valid data comparisons, <u>provided</u> you identify your students by age as well, so that results can be tabulated for only the 13- and/or 17-year-olds. By using this procedure you also will have data for your entire 8th and/or 11th grade. Assessing by grade does allow you to administer the survey within intact classrooms.

If the number of students enrolled in your district or school is not too large to manage from an assessing and scoring standpoint, you may decide to assess all age or grade eligible students and therefore, you will not need to design a plan for sampling. School systems with large enrollments, however, may want to select a sample of students in order to reduce the efforts and costs involved with printing, assessing and scoring the booklets. Keep in mind that sampling is not a requirement for replicating the NAEP survey. A discussion on sampling procedures is included in Appendix A. The discussion provides a "rule of thumb" to follow in determining whether you should assess all eligible students or only a sample and also describes various sampling procedures to follow in selecting students.

Whether or not sampling is used, it will be necessary to prepare a list of students to be assessed. This student roster, arranged in alphabetical order by student name, will assist the test administrator in distributing the booklets as the students arrive for assessment. An example NAEP roster for 13-year-old students is shown below:

I.D. Number	Student Name	(3) Grade	(4) Sex	(5) Birthdate	(6) Race
	Adams, Sue	8	F	Aug. 2, 1963	B
	Baker, John	8	M	Feb. 14, 1963	W
	Carson, Betty	7	F	Oct. 9, 1963	W

When NAEP prepares student rosters for its assessments, the identification number (I.D.) column on the left is blank until the day of assessing. Serial I.D.s are written on the cover page of the booklets and as each student is given a booklet, the test administrator records the I.D. numbers on the roster. If your school already has a student numbering system, you may want to use the student numbers as I.D. numbers and record them on the roster first. Then, when the booklets are distributed, the test administrator should transcribe the I.D. number that appears on the roster to the cover page of the student's booklet.

The student roster will serve as your master control sheet for later transcription of the student's grade (column 3), sex (column 4), birthdate (column 5) and race (column 6) to the booklet covers. It is therefore very important that the I.D.s on the booklet cover page match the I.D.s shown on the roster.

NAEP uses the I.D. number system for its assessments because students do not write their names on the booklets and the rosters never leave the school building. You may be able to simplify the procedures discussed above, if there is no concern with students placing their names directly on the booklets.

CHAPTER 7

PRE-ASSESSMENT TASKS

Prior to the day(s) of assessing, there are several tasks that will need to be performed. These are listed in the checklist below. Some tasks may not be applicable to your particular assessment situation and you may need to add others.

- ☐ Check out tape recorder and cassette tape for malfunctions.
- ☐ Sharpen pencils.
- ☐ Reserve room or auditorium for assessing. (Are there tables or arm chairs for students to use in writing?)
- ☐ If an auditorium is used for assessing, is tape recorder amplification adequate?
- ☐ Prepare a roster of students to be assessed. Show student's name, grade, sex, birthdate and race. This roster will be used to check in students as they arrive.
- ☐ If necessary, prepare and distribute parental permission letters for students being assessed.
- ☐ Reproduce booklets in sufficient quantities so <u>each</u> student will have a booklet.
- ☐ Enter I.D. numbers in the I.D. boxes on the front cover page of each booklet. For example, if you are assessing 200

students, enter codes 00001 thru 00200. These I.D.s will later be recorded on the roster when the students arrive for assessment. (NOTE: This task will not be necessary if you plan to use a roster that already has I.D. numbers assigned.)

- ☐ Notify students selected as to time and place of assessment.
- ☐ If necessary, distribute Student Permit Passes for leaving/entering classes.
- ☐ Prepare an introduction for test administrator to read to students before assessing begins.
- ☐ Other:_____
- ☐ Other:_____
- ☐ Other:_____

CHAPTER 8

ASSESSMENT TASKS

Prior to the students' arrival at the assessment site, check to be sure the correct side of the tape is placed in the recorder. As the students arrive, check them off on the roster and give each student a booklet and two pencils. Enter on the roster the I.D. number that you pre-recorded on the booklet cover or, if the roster was pre-numbered, write the I.D. number on the booklet cover page. Instruct each student not to open the booklet until told to do so.

Since the tape does not begin with a general introduction that describes the assessment, why the survey is being given, etc., the test administrator or other staff person may want to make some introductory comments at this time. If you are doing an age-level assessment following NAEP's schedule for assessment and NAEP's age definitions, be aware that you most likely have selected some students who have not quite reached their 13th or 17th birthday. For this reason, it will cause less confusion during the assessment if no general announcement is made that the survey is being given to only 13- and/or 17-year-olds. The test administrator could talk in terms of, "STUDENTS YOUR AGE ARE BEING ASSESSED TO..."

After the introductory comments, the test administrator should say, "I AM GOING TO TURN ON A TAPE RECORDER AND YOU WILL HEAR ON THE TAPE WHAT WE WANT YOU TO DO. LISTEN TO THE TAPE CAREFULLY. ONCE THE RECORDING STARTS, I CANNOT ANSWER ANY QUESTIONS. IS EVERYONE READY? IF SO, I WILL TURN ON THE TAPE RECORDER."

Turn on the tape recorder. Be sure the tape is audible to all students. As the students complete the example exercise on page 2 of the booklet, check to see that they are marking their answers properly. Give assistance as necessary.

The tape presentation will run for approximately 30 minutes. When the announcer says, "STOP. NOW CLOSE YOUR BOOKLET AND LISTEN CAREFULLY FOR FURTHER DIRECTIONS", turn off the tape recorder.

The test administrator should now direct the students to the questions on the back cover of the booklet. Read all questions and response choices aloud to the students and observe to see that they are filling in only one oval. Give any assistance necessary to obtain the best possible information. Keep in mind that NAEP will be providing data for questions 5 and 6 only. If the students have any difficulty in understanding these two questions concerning the highest level of education completed by their father and mother, the following definitions may be helpful:

- If the student answers, "I don't know" to question 5 or 6 you may be able to determine the correct answer by asking for the occupation of the parent and additional questions concerning schools the parent may have attended, such as nursing school, etc. However, if you are not able to determine the correct educational category from the student's answers, the "I don't know" oval should be filled in.

- In the absence of natural or adoptive parents, questions 5 and 6 apply to the male and/or female in the student's home who is responsible for the day-by-day care of the student; that is, a step-parent, a grandparent, some other adult relative, or an unrelated person, such as a foster parent. If either the male or female parent-figure is absent from the home, the student should still answer to the best of his/her knowledge about the education of that parent-figure.

Since NAEP will be reporting results for questions 5 and 6 only, you may want to redesign the back page and add your own set of questions.

The total time required to check-in the students, distribute the materials and introduce and administer the survey, should take no more than one hour.

CHAPTER 9

POST-ASSESSMENT TASKS

When the assessment is completed you will need to transcribe information from the student roster to the coding boxes on the cover page of each booklet. The procedure described below will identify each booklet according to the student's grade, sex, birthdate and race. It is important that this information be transcribed accurately if you plan to analyze your results for these categories.

Booklet Coding Boxes	Information	Code	Example	
3	Grade	Two Digits	8th grade	= 08
4	Sex	One Digit	Male Female	= 1 = 2
5	Birthdate	Four Digits (month and last two digits of year)	May 1963	=0563
6	Race	One Digit	White Black Spanish Heritage Other	= 1 = 2 = 3 = 4
7	For Your Use	Two Digits	--	
8	For Your Use	Two Digits	--	

Coding boxes 7 and 8 are available for your use to add any other variables you feel would be important. For example, you may want to identify each student by school or by class. These coding boxes could be used for these variables.

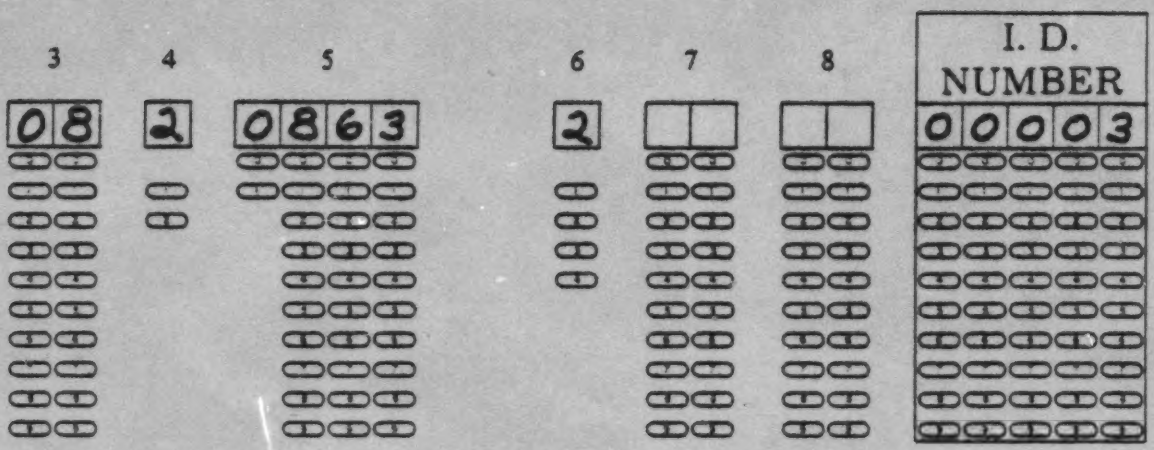
NOTE: NAEP determines racial identification by visual observation and use of surname as the students arrive at the assessment site. Although information is recorded on the student roster and later transcribed to the booklet coding boxes for the four race categories, data is reported for white and black only.

Shown below is the sample 13-year-old roster that was presented in Chapter 6.

I.D. Number	Student Name	(3) Grade	(4) Sex	(5) Birthdate	(6) Race
00003	Adams, Sue	8	F	Aug. 2, 1963	B
00001	Baker, John	8	M	Feb. 14, 1963	W
00002	Carson, Betty	7	F	Oct. 9, 1963	W

In this example, the roster was prepared prior to the day of assessing. I.D. numbers had been serially written on the booklet covers. Since John Baker came to the assessment site first, he was given the first booklet with I.D. number 00001. The test administrator immediately recorded this number next to John's name on the roster. Betty Carson was given the booklet with I.D. number 00002 and Sue Adams received booklet 00003. After the assessment was completed and all booklets handed in, the test administrator transcribed the remaining information (grade, sex, birthdate and race) from the roster to the coding boxes.

As a final example, the booklet cover for Sue Adams looked like this:



NOTE: The ovals beneath the boxes were used by NAEP for machine scoring. You will not have to grid or darken in the ovals for your scoring.

CHAPTER 10

SCORING THE ASSESSMENT BOOKLETS

Since the students record their answers directly in the booklets, the scoring task is primarily a process of transcribing each student's responses to some type of coding form that can be used to tabulate and analyze the results. Once this transcribing task is completed you can either hand tabulate or keypunch the data for computer processing.

All questions are in a multiple-choice format except question 12 on page 15. This open-ended question requires hand scoring using guides that are included in Appendix B. Before deciding to spend the time to hand score it, you may want to carefully review this question and its scoring guide in terms of its importance to you. Whether or not you decide to score this question, we recommend that you do administer it in order to maintain continuity between the booklet and the cassette tape. Your decision to score or not to score need not disrupt the administration of the survey.

The amount of time and effort necessary to transcribe the students' answers from the booklets to the coding forms will be directly related to the number of students assessed. A conservative figure of 5 minutes per booklet could be used as a planning estimate. Thus, if you assessed 100 students, the clerical time involved to transcribe the identification information on the cover page of the booklets (I.D. number, grade, sex, birthdate and race) plus the responses to the survey questions, plus the questions on the back

page would be 500 minutes or about 8 hours. (The estimate of 5 minutes per booklet is quite conservative and you most likely will experience a faster transcribing time.) Illustrations of two sample coding forms you might wish to use are shown below. Form A is probably the simplest format to use if you are interested only in looking at the group performance level of your students on each survey question. Keep in mind that this format would not allow you to make subsequent data tabulations by sex, race, level of parents' education, etc., since the coding form does not identify these variables.

FORM A CODING SHEET FOR HAND TALLYING RESPONSES			
Question Number	Tally of Response Categories	Total	%
1..speech	𝍸	5	6.7
..religion	𝍸 I	6	8.0
..purchase	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 I	51	68.0
..trial	𝍸 𝍸	10	13.3
..I don't know	III	3	4.0
TOTALS		75	100.0
2A..Yes	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	60	80.0
..No	𝍸 𝍸 III	13	17.3
..I don't know	II	2	2.7
TOTALS		75	100.0

30

If you plan to analyze your results by sex, race or any other variables, the Form B format (shown on page 33) would be more appropriate. This format requires you to transcribe the student responses from the booklets to the coding sheets using a "code" system. Form B is designed so that the coded information can be readily keypunched for computer processing and analysis. The example below explains the coding system.

1. Which one of the following is NOT a constitutional right of American citizens?

   ○ The right to freedom of speech

   ○ The right to practice the religion of one's choice

   ● The right to determine who can purchase and live in the house next door

   ○ The right to a fair trial when accused of a crime

   ○ I don't know.

Assume that the student had selected the third response choice. The person doing the transcribing to Form B would code this response as a "3". If the student had selected the first response choice, code it as a "1". If the student had selected the fourth response choice, code it as a "4". This type of coding scheme could be used to transcribe all of the student responses to Form B. If the student had selected the "I don't know" answer choice in the example above, you could code it as a "5" since it is the fifth answer choice. For the sake of conformity, however, it may be best to <u>always</u> code an "I don't know" response as a "9" code.

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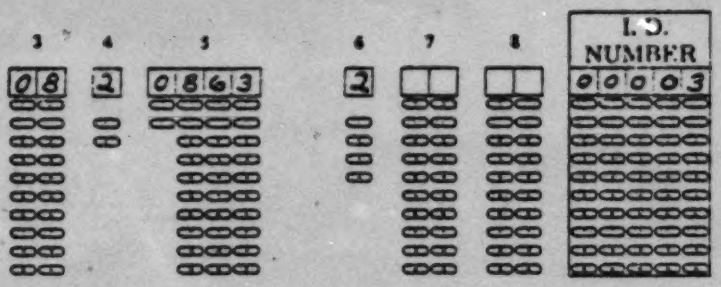
Shown below is a reduced copy of a booklet cover page and a student's response to questions 1 and 2. Form B, on the next page, shows how this information would appear in coded form.



1. Which one of the following is NOT a constitutional right of American citizens?

- ⊂ The right to freedom of speech
- ⊂ The right to practice the religion of one's choice
- ▬ The right to determine who can purchase and live in the house next door
- ⊂ The right to a fair trial when accused of a crime

- ⊂ I don't know.

2. A. Does the President ALWAYS have to obey the laws of the United States?

- ▬ Yes
- ⊂ No

- ⊂ I don't know.

B. Does a judge ALWAYS have to obey the laws of the United States?

- ⊂ Yes
- ⊂ No

- ▬ I don't know.

C. Does an army general ALWAYS have to obey the laws of the United States?

- ⊂ Yes
- ▬ No

- ⊂ I don't know.

FORM B CODING SHEET FOR KEY PUNCHING RESPONSES												
Booklet Cover Information					Survey Questions							
I.D. No.	(3) Grade	(4) Sex	(5) Birthdate	(6) Race	1	2A	2B	2C	3A	3B	3C	ETC.
00003	08	2	0863	2	3	1	9	2				

A listing of the questions and correct answers for the 13- and 17-year-old assessment booklets is provided in Appendix C. Note that all questions asked of 13-year-olds were also asked of 17-year-olds. There are, however, a few questions in the 17-year-old booklet that do not appear in the 13-year-old booklet (questions 30B, 31A & B, and 32A, B, C & D).

You may be able to complete your scoring by using present school personnel. If this presents a problem, however, do not overlook using volunteer help from outside the school system. Interested parents could provide a very valuable service during your scoring task.

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CHAPTER 11

ANALYZING AND COMPARING YOUR RESULTS TO NAEP

Since NAEP determines how well students in various groups achieve certain educational goals you will be able to compare your students as a group to these national groups if you follow the requirements for replication.

It is very important to keep in mind that NAEP will not be reporting an overall score for the booklet. Each question stands alone and no attempt is made to report the percentage of students who answered correctly 50% or 75% or 90% of the questions. Students assessed by NAEP do not receive an individual score. Instead, for each survey item, the NAEP data answer the question, "What percentage of the nation's students know or can do this?"

This chapter discusses the various data results that will be reported by NAEP. It is important to note that the types of comparisons you will be able to make will depend upon the type of assessment you conduct (age-level versus grade-level). There are basically two different types of results that NAEP will report:

- question-by-question results
- "theme" results (cluster of questions)

Question-By-Question Results

NAEP results will be provided by age-level and grade-level for each question. Thus, whether you conduct an age-level assessment or a grade-level assessment, you will be able to compare the

results of your students to the national sample. The percentage of students that respond correctly to a given question is called the p-value. The statistical equation for determining p-values is:

Let P = the percentage of students answering a question correctly.

$$P = \frac{n_c}{n}\left(\frac{\text{number of students responding correctly}}{\text{number of students responding}}\right) X\ 100$$

For example, assume that 100 students respond to a question and that 86 select the correct answer choice. The p-value for this question would be:

$$P = \frac{86}{100} = .86\ X\ 100 = 86.0\%$$

Theme Results

NAEP results also will be provided by "themes". A theme is comprised of a cluster of questions that all measure a similar knowledge, skill or attitude. The citizenship questions are categorized according to four general themes:

- Political Attitudes
- Political Education
- Political Knowledge
- Social Attitudes

NOTE: Theme results will be reported by age-level only. Thus, if you conduct a 13- and/or 17-year-old assessment, you will be able to make theme comparisons.

NAEP does not plan to compute and report grade-level (8th and/or 11th grade) theme results at this time.

The NAEP theme results will be reported as the mean (average) percentage of students that responded correctly to each theme. This statistic is called the mean p-value. The statistical equation for computing the mean p-value is:

Let $\bar{P}$ = the p-value for a theme.

$$\bar{p} = \frac{P_1 + P_2 \ldots}{n_q} = \frac{\text{sum of p-values}}{\text{number of questions}}$$

For example, the "Social Attitudes" theme is comprised of test questions 3ABC, 6ABCDE, 15ABC, 20 and 27. Assume the individual p-values for each question were as shown below:

Question	p-Value(%)	Question	p-Value(%)
3A	72.4	15A	62.8
3B	93.6	15B	71.1
3C	64.9	15C	89.9
6A	88.1	20	90.7
6B	85.5	27	82.4
6C	89.0		
6D	91.7		
6E	93.4		

Then, $\bar{p} = \frac{72.4 + 93.6 + 64.9 + 88.1 + \ldots 82.4}{13}$

$$\bar{p} = \frac{1075.5}{13} = 82.7\%$$

Thus, the mean (average) percentage of students that responded correctly to the cluster of questions comprising the Social Attitudes theme would be 82.7%.

A listing of all questions and their categorization by theme is provided in Appendix C. Note that each question is also keyed to a citizenship objective. While NAEP does not plan to compute mean p-values for each objective, this information is provided should you want to analyze your data by objective. The citizenship objectives are shown in Appendix D.

Additional NAEP Reporting Groups

In addition to reporting national results, NAEP also will report on five subgroup populations. Again, depending upon the type of assessment you conduct (age-level versus grade-level), you will be able to compare your results to some or all of these subgroups. The five NAEP reporting subgroups are shown below.

Geographic Region.....	Northeast, Southeast, Central, West
Sex.....	Male, Female
Race.....	White, Black
Level of Parental Education...	No High School, Some High School, Graduated High School, Post High School
Size and Type of Community....	High-socioeconomic (Affluent) Urban; Low-socioeconomic (Disadvantaged) Urban; Rural; Urban Fringe; Main Big City; Medium City; Small Places

Definitions for these five subgroup populations are shown in Appendix E.

Summary of Comparison Options

A summary of the various types of comparisons you will be able to make to the NAEP data is shown below. A true NAEP replication (age-level) does offer you more possible data comparisons than a grade-level assessment. However, even though you conduct a grade-level assessment (8th and/or 11th) and analyze your results for those students who are 13- and/or 17-years-old, there are several comparisons you will be able to make.

NAEP RESULTS

Type of Assessment	Nat'l	Region	Sex	Race	Parent's Educ.	STOC*
Age-Level						
A. Question-By-Question	Yes	Yes	Yes	Yes	Yes	Yes
B. Themes	Yes	Yes	Yes	Yes	Yes	Yes
Grade-Level						
A. Question-By-Question	Yes	Yes	Yes	No	No	No
B. Themes	No	No	No	No	No	No

* Size and Type of Community

NOTE: While NAEP does not plan to report grade-level results for all categories, you could compute, for example, the NAEP theme results if this would be important to your assessment comparisons.

Accuracy of Comparisons Between National Assessment Data And Your Data

The measurement of student attainments, like the measurement of the length of physical objects, can be done with reasonable accuracy if the appropriate tools are used and the proper procedures are followed. However, even under the best of circumstances, errors may creep into our measurements that may cause us to wonder what confidence we should place in the findings. Errors could result from happenstance, such as a firebell going off during the middle of the assessment session or they may stem from a lack of proper planning, such as, scheduling the assessment at a time when honor students are out of school pursuing independent study. Either instance would probably bias the results, but the amount of influence they would have on the overall results cannot easily be gauged. The best we can do in order to minimize these and similar influences is to adhere to good assessment practices.

Assuming that you do not experience situations similar to those discussed above, there remains an additional source of variation that you will want to take into account when comparing data from your students to data collected by National Assessment. These reside in the NAEP data and result from the fact that NAEP assesses a sample of 13- and 17-year-olds rather than assessing all students.

Fortunately, this variation (sampling error), unlike some other types of errors, can be estimated very accurately and in NAEP samples is found to be very small. Nonetheless, errors of any type may be a reason for concern, especially when very accurate comparisons are required.

For this reason, National Assessment, in publishing its findings, provides estimates of sampling error along with data showing percentages of students responding correctly. The "unit of error" that NAEP reports is called a standard error and is expressed in percentage points. For most questions, one standard error is usually found to be between 0.5 and 1.0 percentage points. The p-values as reported by NAEP, plus and minus one standard error, provides an interval that we are 68% confident would contain the p-values obtained had all eligibles been assessed. Thus, if NAEP reports a p-value of 60% for a particular question and a standard error of 1.0 percentage points, you can be 68% confident that the true p-value lies somewhere between 59% to 61%.

If a higher level of confidence is desired, you can view the NAEP p-values in terms of two standard errors which will raise the confidence level from 68% to 95%. For example, assume the same p-value of 60% as discussed above. Two standard errors would double the interval. Therefore, you would be 95% confident that the true p-value lies somewhere between 58% to 62%.

If you assess all of your age-eligibles or grade-eligibles, there will not be any sampling errors associated with your student data. If you assess a sample of eligibles, however, your results also will contain sampling errors and you will need to determine your p-value ranges as discussed above. Appendix A provides information that will help you determine your sampling errors and make comparisons to the NAEP data.

Comparing Your Results to NAEP Results

If you conduct your assessment following the procedures for replicating the NAEP model, you can make comparisons of your students to the national sample of students to see if any differences appear in performance levels. The formula for determining these differences is:

Let D = the difference between your results and the NAEP results.

P = the percentage of students answering a question correctly (p-value).

Then $D = P_{yours} - P_{NAEP}$

For example, assume that your p-value for a particular question is 75.0% and NAEP's p-value is 70.0%. Using the formula above,

$D = 75.0\% - 70.0\% = 5.0\%$

Thus, your students' performance level would be 5.0% above the national sample. This formula should be used when comparing results for each survey question, themes, or any of the subgroup populations, such as sex, race, region of the country, etc.

Once the differences in p-values have been computed, you will want to determine if they are statistically significant. In other words, are the differences "reliable" differences? Remember that each NAEP p-value does contain a small amount of variation due to sampling. You will need to take this into account when looking at the differences in p-values. The example below explains how to determine if the differences are statistically significant (reliable).

- First, look at the standard error figure associated with the NAEP p-value. Assume the p-value is 70.0% and the standard error is 0.8 percentage points. As described earlier, this means that you can be 68% confident that the true p-value lies somewhere between 70.0% $\pm$ one standard error, or 69.2% to 70.8%. Since your p-value was 75.0%, you can be fairly certain (68% confident) that your students did perform better.

- If you want to increase the confidence level to 95%, simply double the reported NAEP standard error (0.8 X 2 = 1.6). This estimates that the p-value now lies somewhere between 70.0% $\pm$ 1.6 percentage points, or 68.4% to 71.6%. Since your students' p-value was 75.0%, you can be very certain (95% confident) that your students did perform better.

- While a difference of 1% or 2% in performance levels could very well be statistically significant, these differences may not necessarily be "educationally"

significant. In other words, a difference of 15% on a particular question or theme or subgroup would certainly have greater educational implications than would a 2% difference.

CHAPTER 12

CONCLUDING REMARKS

We hope this manual will be helpful as you plan and implement your assessment. It was difficult to define a set of procedures that would be basic to everyone but we hope this manual has something to offer to each of you.

Keep in mind that this citizenship assessment kit is a pilot effort to determine how useful materials like these are to your assessment programs. Therefore, we ask that you note any problems you encounter in using the materials. We plan to send a questionnaire to each of you in a few months to solicit your reactions and comments concerning this pilot effort. Your candid evaluation of the kit's strengths and weaknesses will help us decide whether assessment kits should be developed in other learning areas.

APPENDIX A

DISCUSSION ON SURVEY SAMPLING

While techniques of probability sampling have not been utilized widely in education, interest in applying these procedures is growing because of a general need to economize in the gathering of test information and other kinds of educational data. The purpose of this discussion is to acquaint readers who are not familiar with sampling theory or techniques with some basic facts, limitations and applications of sampling so that they can decide whether to use these procedures for conducting an assessment with the citizenship assessment kit.

The first part of the discussion presents an overview of sampling, its benefits and limitations. This information should be helpful in guiding the reader's decision whether to take a sampling approach rather than assess all students. The rest of this discussion presents step-by-step instructions for two simplified sampling procedures. Neither approach requires extensive calculations, since information such as appropriate sample sizes and estimates of standard error is presented in tabular form. For readers with backgrounds in sampling statistics who wish to explore more elaborate sampling alternatives than will be discussed here, we refer them to two references that will be useful.[1,2]

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[1] Cochran, W.G., Sampling Techniques. (Second Edition). New York: Wiley, 1963

[2] Kish, L. Survey Sampling. New York: Wiley, 1965

Deciding Whether Sampling Can Be of Benefit to You

The techniques of sampling enable you to obtain reasonably accurate estimates of performance levels of groups of students without having to test each and every student. In other words, by testing a sample of students one obtains information that can be used to predict how the total population might have performed had every student of a particular age or grade taken the survey. Quite obviously the use of sampling to acquire this information means that the costs and efforts associated with test printing, scoring and analysis probably can be reduced. Moreover, the entire assessment operation may be more manageable, because of fewer students being assessed. It is possible also that fewer test administrators will need to be trained and those that are involved can be offered more training and supervision to help assure a smooth, efficient assessment operation.

Sampling is not, however, without limitations. The most important limitation is that its use precludes your being able to identify performance levels of individual students who were not included in the sample. Thus, if you feel that it is essential to have information on an every-student basis you need read no further, for in this instance at least, sampling is not appropriate.

A second limitation stems from the fact that sampling is most efficient, from a cost-savings point of view, in schools or school systems that have large enrollments. As a general rule, the

larger the enrollment, the smaller the sample can be as a percentage of the total enrollment and still provide accurate information. With small enrollments it may be necessary to assess almost all students in a particular age or grade to assure accurate estimates. To decide whether your school or district (for sampling purposes) falls into either a "large enrollment category" for which sampling can be efficient or into a "small enrollment category" for which sampling may offer too few advantages to be practical, you will need to relate your grade or age enrollment data to the information provided in Table 1. To use this table, match your enrollment figures for grade 8 or grade 11 to the number in the column labeled "total number of eligibles" that approximates your enrollment. For example, if you wish to assess 8th graders and your 8th grade enrollment is 797 find the row for 800 eligibles. As shown by the numbers to the right, the sample sizes necessary to produce reliable data range from 740 students (very reliable) down to 270 students (less reliable). In this example, a sample size of 740 is estimated in Table 1 to result in a standard error of 0.5 percentage points. Thus, if the percentage of students responding correctly on a given question is found to be 50%, we are 95% confident that the percentage for all eligibles would be 50% $\pm$ 2 standard errors. This provides a confidence interval of 49% to 51%. In contrast, a sample size of 270 is estimated to result in a standard error of 2.5 percentage points. With this size sample, a 95% confidence interval when p = 50% would be 45% to 55%.

TABLE 1

TABLE OF APPROXIMATE SAMPLE SIZES

FOR VARIOUS LEVELS OF SAMPLING ERROR

Total Number of Eligibles	Estimated Size of One Standard Error*		
	0.5%	1.0%	2.5%
100	100	100	100
150	150	150	110
200	200	185	135
250	250	230	160
300	300	270	175
350	340	310	190
400	390	350	200
450	430	380	215
500	475	415	225
600	570	485	240
700	650	550	255
800	740	600	270
900	825	665	275
1000	910	715	285
1250	1110	835	300
1500	1300	940	315
1750	1500	1030	325
2000	1667	1110	335
2500	2000	1250	350
3000	2300	1365	355
4000	2850	1540	365

*The percentage (P) answering correctly ± 2 times standard error provides an interval that we are 95% confident would contain the percentage answering correctly of all age eligibles. If P = 50% and one standard error equals 1.0%, the 95% confidence interval is 48% to 52%.

The enrollment used in this example is such that sampling ought to be considered seriously as an option. Whether to assess 740 students rather than a minimal sample of 270 should be decided after taking into account the sampling error that the different sample sizes are likely to produce. Strictly speaking, this decision is not one even a sampling expert should make. Rather it should be made by school personnel who are familiar with the intended uses of the assessment information and who have a feel for the level of accuracy needed.

The information in Table 1 also can be used to estimate sample sizes for age-populations. Just use 8th grade enrollments as an approximation of the number of 13-year-olds in your school and use 11th grade enrollments as an approximation of the number of 17-year-olds and proceed as discussed previously.

In studying this table it becomes evident that sampling is potentially most useful for schools or districts in which grade enrollments exceed 400-500 students. With smaller enrollments it is necessary to test almost all students to obtain precise estimates from sampling. Even if greater error can be tolerated in the findings one must assess nearly half of the students.

A final disadvantage of sampling to be discussed here stems from possible disruptions to ongoing classroom instruction. The step-by-step procedures to be discussed later in this Appendix require that students be sampled randomly from a school-wide or district-wide listing by grade or age-criteria. Selection of students from

such a listing means that at the time of testing, the students will need to leave their regularly assigned classes and come to a central site to participate. It is highly unlikely that random selection procedures would ever result in all students within any particular classroom being selected. Moreover, it is impossible to predict in advance of the actual selection, for example, whether one, six, eight or more students will need to leave Mr. Ross's class in American Problems.

While sampling techniques do exist which minimize these kinds of problems, they are somewhat cumbersome and require more advanced statistical procedures. Readers wishing to investigate these possibilities further are referred to discussions on "cluster sampling" in textbooks such as Cochran (1963) mentioned earlier.

Overview of Steps in Sampling

Sampling requires that a few more planning steps be undertaken prior to testing than is the case when all students are assessed. Also, there are additional steps of a procedural nature that result from use of sampling. Steps of both kinds are outlined below, before discussing some of them in more detail.

Planning Steps Involved

1. Identifying the population(s) of interest for purposes of comparing your data to NAEP data:
   - (a) 13-year-olds only
   - (b) 17-year-olds only
   - (c) both 13-year-olds and 17-year-olds
   - (d) 8th graders
   - (e) 11th graders
   - (f) both 8th graders and 11th graders

2. Deciding whether there are any subgroups of the above populations for which information is needed, such as males vs females, black students vs white students, students attending school A vs students attending School B, etc.

3. Deciding the amount of error you are willing to tolerate in the findings (see Table 1 for amount of estimated error associated with data from different sample sizes).

4. Deciding which one of the two sampling approaches described later in this discussion will be more useful to you.

Procedural Steps Involved

1. Preparing a listing of eligible students (see definitions in Chapter 6). The list should be arranged alphabetically by student's last name. Other student information such as sex, race , birthdate or school attended may also be needed and will be discussed later.

2. Identifying the required number of students to be sampled.

3. Selecting randomly the particular students who will comprise the sample.

4. Notifying students and having them complete the survey booklet.

5. Analyzing the data and computing percent correct for each question based on sample data.

6. Determining the reliability of the comparisons between your data and those provided by NAEP.

Choosing Which Sampling Approach Will Be Most Useful For Your Purposes

As mentioned earlier, this manual is intended to help small and medium size districts, who may not have measurement or statistical specialists on staff to conduct an assessment following NAEP procedures. For this reason we are recommending two sampling procedures that are straightforward, and easy to implement. If done carefully each procedure will result in reliable information. The main difference between them lies in their appropriateness for examining certain types of educational questions.

The first type of sampling that will be discussed is called simple random sampling. It is perhaps most appropriate when only district-wide or school-wide information is required and information on certain sub-groups is not essential. For example, if your main interest is to answer the question "How well do students in my district or school compare as a total group to NAEP findings?" simple random sampling can provide the answer.

On the other hand, if acquiring information on subgroups of students is highly desired or essential, then a procedure called stratified random sampling is recommended. For example, if your main purpose is to compare the relative performances of students in school A versus school B, stratified random sampling should be followed. This procedure will help assure that your sample

will automatically include enough students from each school to make valid comparisons possible.

These two approaches will now be described in more detail.

Simple Random Sampling

The word "random" may mean different things under different circumstances. As the word is used here, it means providing an equal opportunity for each eligible student to be included in the sample. Thus, it is necessary to prepare a listing of names of all eligible students before the selection can take place.

Prepare the Listing

With simple random sampling any ordering of student names is satisfactory but alphabetical ordering is frequently used. This may be done by clerks or in some schools can be provided by computer. In some instances it may be helpful to note additional student or school information alongside names when preparing this listing. If, for example, a specific time and date for the assessment has been set, it may be useful to list the class assignment of each student for that time and date so, if selected, the teacher can be notified. Or it may be easier to do this after the selection has been made inasmuch as this information will be needed only for the students actually sampled.

The next step is to number the list sequentially from 1 to N, where N is the total number of eligibles. No student's name should appear more than once, nor should any one number appear more then once.

Determine Sample Size

Table 1 should be consulted to determine the sample size needed, taking into account the amount of error that is likely to result from samples of different sizes. Keep in mind that the numbers shown are approximate sample sizes which can be adjusted somewhat if necessary. For instance, if your auditorium holds 300 students and the proper sample size for your particular enrollment is 310, go ahead and decide to sample 300 only.

Randomly Select Students

An effective means of selecting students randomly is to use a table of random numbers found in many statistics textbooks or in mathematics reference books. Beginning with the first random number listed and taking additional numbers in sequence, select students from the listing sheet who have corresponding numbers. If you encounter a random number larger than any number on your listing sheet, disregard it. If you encounter the same number twice, also disregard it. Continue this process until the appropriate number of students have been selected. It is necessary to keep a tally of the number of students selected so that you know when the proper sample size has been reached.

Students so selected constitute the sample to be assessed. Every effort should be made to assess these students and only these students.

Stratified Random Sampling

Stratified random sampling provides two major advantages over simple random sampling. First, it can be used to help assure that certain subgroups will be adequately represented in the sample so that these subgroup comparisons can be made. For instance, if it is essential to be able to compare students in school A with students in school B, stratified sampling should be employed.

A second advantage is that smaller standard errors are often obtained, or smaller sample sizes can be used (as compared to simple random sampling) if stratified sampling is employed. One can achieve these benefits from this type of sample even though you do not intend to make comparisons among the stratification variables or subgroups.

Preparing the Listing

The idea behind stratified sampling is to divide the list of eligibles into relatively homogeneous parts or strata such as separate schools, separate grades within schools or scholastic grade or previous test results -- "A" students, "B" students, etc. Stratification according to performance variables such as previous test results or student grade averages serves to improve the accuracy of estimates provided through sampling. Stratification according to reporting variables such as school attended may

increase accuracy but is intended mainly to assure that you will be able to make comparisons between subgroups of students.

Whatever variables are used, eligibles should be classified separately at the time the student eligibility lists are prepared. For example, if your intention is to compare students from school A with students from school B you would prepare two separate lists. Number student names sequentially beginning with 1 on the first list and continue the number sequence onto the second list as necessary.

Determine Sample Size

Refer to Table 1 to determine the total number of students to be sampled, again taking into account the size of the standard error that is likely to result from samples of different sizes. If the number of eligibles on each listing is different, as is likely to be the case, it will be necessary to properly apportion the total sample size to each of the separate listings. This is accomplished by computing the sampling fraction, f, and using it to determine the number of students to be sampled from each listing.

$$f = \frac{n}{N}$$

where n = total sample size needed

N - total number of eligibles

For example, assume that the district-wide 8th grade enrollment is 1000. From Table 1 you decide to sample 715 (one standard error estimated to be 1%). The fraction (f) then is given by

$$f = \frac{715}{1000}$$

$$= .715$$

Further assume that you have two listings -- one for school A with 400 students and another for school B with 600 students (400 + 600 = 1000). In this example you would select 286 students (.715 X 400 = 286) from school A and 429 students (.715 X 600 = 429) from school B.

At this point it is necessary to note a possible limitation of Table 1 in estimating sample sizes when stratified sampling is used. Since Table 1 was designed to estimate sample sizes for the <u>total</u> population its use will not always assure a sufficient sample size for certain subgroups.

For example, assume that your district enrollment for grade 8 again is 1000 and you again decide to sample 715. However, now assume that 800 attend school A and only 200 attend school B.

After applying the sampling fraction (f) to the eligibility list for each school you find that 572 are to be sampled from school A and 143 from school B. The

problem that arises is that the disproportionate enrollments between the two schools result in only 143 students being assessed in school B. Table 1 states that when the number of eligibles is only 200, it is necessary to sample 185 to assure the stated size of sampling error. Under the circumstances you have two choices:

A. Sample 572 from school A and 143 from school B with the recognition that data from school B probably will contain larger sampling errors than data from school A.

B. Sample 572 from school A and test all students in school B thereby eliminating sampling errors for school B students.

Randomly Select Students

The procedure for selecting students is the same as that described on page A-9 except that two or more lists are being considered. As the random numbers are identified from the table, determine whether any of the student listings contain a corresponding number. If so, that student is selected. Upon reaching the proper sample size for any one list, continue this process for the remaining lists until the proper sample size has been reached for each list.

Be sure that these students and only these students so selected are assessed.

Determining Population estimates from Sample Data

The intent of sampling, of course, is to estimate how well the total group has performed even though not all students were tested.

In simple random sampling and in stratified random sampling as described here, the sample data provides a direct estimate of the entire age or grade population. Thus, for each question, one need only compute the percent correct from sample data to obtain an estimate of percent correct for the population. The first step is to find the proportion (p) of students in the sample responding correctly in which

$$p = \frac{n_c}{n} = \left(\frac{\text{number of students responding correctly}}{\text{number of students responding}} \right)$$

The percent correct (P) is then found by multiplying p X 100 to give P. This process is repeated for each question. Since some students who were sampled may not take the survey, the number of students responding may not equal the sample size in all cases.

In addition to computing percent correct on total group performance for each question, you may wish to compute percent correct for certain subgroups such as males versus females. The formula for computing percent correct for subgroups is the same as used for the total group except only subgroup members are counted. Again the first step is to find the proportion (p) of sample students in the subgroup responding correctly in which

$$p = \frac{n_c}{n} = \frac{\text{number of students in subgroup responding correctly}}{\text{number of students in subgroup responding}}$$

Thus, to compute proportion correct for males and females,

$$p_m = \frac{n_c}{n} = \frac{\text{number of males responding correctly}}{\text{number of males responding}}$$

and

$$p_f = \frac{n_c}{n} = \frac{\text{number of females responding correctly}}{\text{number of females responding}}$$

The percent correct (P) for each group is then found by multiplying each p X 100.

The reliability of subgroup data depends partly on the number of respondents within those subgroups that happen to have been selected in the sample. Males and females, as a subgroup, probably can be broken out since approximately half of the sample will be comprised of males and half of females. For other subgroups such as white or black students, it may be the case that too few whites or blacks were selected in the sample to result in reliable estimates. Procedures for judging the reliability of the findings will be discussed next.

Estimating the Reliability of Your Findings

After you have completed the computations, question by question, for determining the percent correct for total group and for subgroups of interest, you may also wish to determine how reliable

these data are. For instance, how sure can you be that the sample data accurately estimates the findings you might obtain had all students been assessed? Or, how sure can you be that subgroup data are really accurate estimates?

To assist in making these determinations we have provided estimates of standard error that usually result from samples of various sizes in Tables 2-9. Error estimates in these tables tend to be larger than those you might obtain if you actually calculate the error in your particular sample according to standard statistical formulas. In other words, you can be reasonably sure that standard errors that you might compute from your sample will not be larger than those estimated by the tables.

In order to use the tables you will need to provide three kinds of information:

(1) your sample size. You must know the number of students in the total sample and the number of students in the sample making up particular subgroups such as the number of males and the number of females.

(2) percent correct. You must know for each question the percent correct for the total sample and the percent correct for any subgroups of interest within the sample.

(3) sampling fraction. You must compute the sampling fraction (f) for the total sample (see page A-12). Depending upon the value of f you will need to refer to different tables. The tables cover values of f from 0.0 to .79.

An explanation of the proper use of Tables 2-9 will be provided by an example. Suppose that there are 1000 eligibles in your district and you decided from Table 1 to sample 715 students because that size sample was estimated (by Table 1) to produce sampling errors of about 1%. Suppose further that you stratified by school according to the sampling fraction .715 so that 286 of 400 eligible students were sampled from school A and 429 of 600 eligible students were sampled from school B. After sampling, you counted the number of males and females in the sample and found 370 males and 345 females.

For question one the percent correct for each group was found to be as follows:

$P_{total} = 64\%$

$P_{school\ A} = 83\%$

$P_{school\ B} = 51\%$

$P_{males} = 57\%$

$P_{females} = 71\%$

We will first determine the standard error for the total group. Since different tables provide data for different ranges of f, we go to Table 9 because this table is for f = .70 - .79 and f in this example is .715. Next we locate the sample size that is closest to 715. This is found to be 700. We then locate the percent correct that is closest to 64%. At the intersection of the row showing sample size and the column showing percent correct is a number, .90, which is the standard error (se) given in percentage points. The percent correct, plus and minus two times this

standard error provides an interval which we are 95% confident contains the true population value. In this case this interval is 62.2% - 65.8%.

A second example will be provided to show how the reliability of male and female data can be determined. Entering Table 9 for a sample size of 370 (350) and for percent correct of 57% (55%) we find the standard error for males to be 1.33 percentage points.

With a sample size of 345 (350) and percent correct of 71% (70), Table 9 gives 1.23 as the standard error for females.

The question of interest now is whether the findings for males and females are statistically significant. To test this we first determine the difference value (D) as follows:

$$D = P_m - P_f$$
$$= 57\% - 71\%$$
$$= -14\%$$

Next we compute the standard error of the differences as follows*

$$se_D = \sqrt{se_{p_m}^2 + se_{p_f}^2}$$
$$= \sqrt{(1.33)^2 + (1.23)^2}$$
$$= \sqrt{3.2818}$$
$$= 1.81$$

---

* Many hand calculators compute square roots directly.

If $$\frac{D}{se_D}$$

is larger than plus or minus 2.0, then the difference (D) is significant at the 95% level of confidence. In this example, since

$$\frac{D}{se_D} = \frac{-14\%}{1.81} = -7.73$$

the difference between male and female findings is statistically significant.

In a final example comparing school A and school B, we will show only the results so that you can verify your own computations.

$$D = P_A - P_B$$

$$= 32$$

$$se_D = \sqrt{sep_A^2 + sep_B^2}$$

$$= 1.57\%$$

$$\frac{D}{se_D} = 20.38$$

Comparing Your Data to NAEP Data

The number and type of comparisons you will be able to make between your data and NAEP data depend on whether you assessed by age or by grade. More comparisons are possible if you have assessed by age as explained in Chapter 11 of this manual.

Another factor that possibly will limit the type and number of comparisons is the number of students of a particular group that actually show up in your sample. NAEP gathers information nationwide in all types of schools, but it may be the case that your

sample (or even your population) does not contain enough students of a particular type to make certain comparisons meaningful. For instance, you may have very few students whose parents have not completed high school. Your sample may not contain any students like this. Thus, it would be meaningless to compare your findings to the particular category of NAEP findings which includes only students of this kind.

Since the procedures for making comparisons are very similar to the ones described previously in the section on Estimating the Reliability of Your Findings, they will only be summarized here.

The main difference between what follows and the procedures discussed previously is that you must include NAEP data for percent correct and for standard errors along with your data in the formulas.

To compare your percent correct to NAEP percent correct for each question compute:

$$D = P_{yours} - P_{NAEP}$$

and $$se_D = \sqrt{se_{P_{yours}}^2 + se_{P_{NAEP}}^2}$$

and determine if $\frac{D}{se_D}$ is larger than $\pm$ 2.0.

To compare any subgroup such as males compute:

$$D_{males} = P_{your_{males}} - P_{NAEP_{males}}$$

and $$se_{D_{males}} = \sqrt{sep_{your\ males}^{2} + sep_{NAEP\ males}^{2}}$$

and determine if $\frac{D_{males}}{se_{D_{males}}}$ is larger than $\pm$ 2.0.

TABLE 2

ESTIMATES OF STANDARD ERRORS FOR P-VALUES WHEN SAMPLING FRACTIONS ARE

0 to .09

If the sample size n= [redacted] and the percent correct (p-value) is computed to be [redacted]

n	5% or 95%	10% or 90%	15% or 85%	20% or 80%	25% or 75%	30% or 70%	35% or 65%	40% or 60%	45% or 55%	50%
	one standard error equals:									
100	2.13	2.94	3.50	3.92	4.24	4.49	4.67	4.80	4.87	4.90
150	1.74	2.40	2.85	3.19	3.46	3.66	3.81	3.91	3.97	3.99
200	1.51	2.07	2.47	2.76	2.99	3.17	3.30	3.38	3.44	3.45
250	1.35	1.85	2.21	2.47	2.67	2.83	2.95	3.03	3.07	3.09
300	1.23	1.69	2.01	2.25	2.44	2.58	2.69	2.76	2.80	2.82
350	1.14	1.57	1.86	2.09	2.26	2.39	2.49	2.56	2.60	2.61
400	1.06	1.46	1.74	1.95	2.11	2.24	2.33	2.39	2.43	2.44
450	1.00	1.38	1.64	1.84	1.99	2.11	2.19	2.25	2.29	2.30
500	0.95	1.31	1.56	1.75	1.89	2.00	2.08	2.14	2.17	2.18
600	0.87	1.19	1.42	1.59	1.72	1.82	1.90	1.95	1.98	1.99
700	0.80	1.11	1.32	1.47	1.60	1.69	1.76	1.81	1.83	1.84
800	0.75	1.03	1.23	1.38	1.49	1.58	1.64	1.69	1.72	1.72
900	0.71	0.98	1.16	1.30	1.41	1.49	1.55	1.59	1.62	1.63
1000	0.67	0.93	1.10	1.23	1.34	1.41	1.47	1.51	1.53	1.54
1500	0.55	0.76	0.90	1.01	1.09	1.15	1.20	1.23	1.25	1.26
2000	0.48	0.65	0.78	0.87	0.94	1.00	1.04	1.07	1.08	1.09
2500	0.42	0.58	0.70	0.78	0.84	0.89	0.93	0.96	0.97	0.97
3000	0.39	0.53	0.64	0.71	0.77	0.82	0.85	0.87	0.89	0.89
3500	0.36	0.49	0.59	0.66	0.71	0.76	0.79	0.81	0.82	0.82
4000	0.34	0.46	0.55	0.62	0.67	0.71	0.74	0.76	0.77	0.77

TABLE 3

ESTIMATES OF STANDARD ERRORS FOR P-VALUES
WHEN SAMPLING FRACTIONS ARE

.10 to .19

If the sample size n= [redacted] and the percent correct (p-value) is computed to be [redacted]

n	5% or 95%	10% or 90%	15% or 85%	20% or 80%	25% or 75%	30% or 70%	35% or 65%	40% or 60%	45% or 55%	50%
one standard error equals:										
100	2.02	2.78	3.31	3.71	4.01	4.25	4.42	4.54	4.61	4.63
150	1.65	2.27	2.70	3.02	3.27	3.46	3.60	3.70	3.76	3.78
200	1.42	1.96	2.33	2.61	2.83	2.99	3.12	3.20	3.25	3.27
250	1.27	1.75	2.09	2.34	2.53	2.68	2.79	2.86	2.91	2.92
300	1.16	1.60	1.90	2.13	2.31	2.44	2.54	2.61	2.65	2.67
350	1.08	1.48	1.76	1.97	2.14	2.26	2.35	2.42	2.46	2.47
400	1.01	1.38	1.65	1.85	2.00	2.12	2.20	2.26	2.30	2.31
450	0.95	1.31	1.55	1.74	1.88	1.99	2.08	2.13	2.16	2.18
500	0.90	1.24	1.47	1.65	1.79	1.89	1.97	2.02	2.05	2.06
600	0.82	1.13	1.35	1.51	1.63	1.73	1.80	1.85	1.87	1.88
700	0.76	1.05	1.25	1.39	1.51	1.60	1.66	1.71	1.73	1.74
800	0.71	0.98	1.16	1.30	1.41	1.49	1.56	1.60	1.62	1.63
900	0.67	0.92	1.10	1.23	1.33	1.41	1.47	1.51	1.53	1.54
1000	0.64	0.88	1.04	1.17	1.26	1.34	1.39	1.43	1.45	1.46
1500	0.52	0.71	0.85	0.95	1.03	1.09	1.14	1.17	1.18	1.19
2000	0.45	0.62	0.74	0.82	0.89	0.94	0.98	1.01	1.03	1.03
2500	0.40	0.55	0.66	0.74	0.80	0.85	0.88	0.90	0.92	0.92
3000	0.37	0.51	0.60	0.67	0.73	0.77	0.80	0.82	0.84	0.84
3500	0.34	0.47	0.56	0.62	0.67	0.71	0.74	0.76	0.78	0.78
4000	0.32	0.44	0.52	0.58	0.63	0.67	0.70	0.71	0.73	0.73

TABLE 4

ESTIMATES OF STANDARD ERRORS FOR P-VALUES
WHEN SAMPLING FRACTIONS ARE

.20 to .29

If the sample size n= [redacted] and the percent correct (p-value) is computed to be [redacted]

n	5% or 95%	10% or 90%	15% or 85%	20% or 80%	25% or 75%	30% or 70%	35% or 65%	40% or 60%	45% or 55%	50%
	one standard error equals:									
100	1.90	2.61	3.11	3.48	3.77	3.99	4.15	4.26	4.33	4.35
150	1.55	2.13	2.53	2.84	3.07	3.25	3.38	3.48	3.53	3.55
200	1.34	1.84	2.19	2.46	2.66	2.81	2.93	3.01	3.05	3.07
250	1.20	1.65	1.96	2.20	2.38	2.52	2.62	2.69	2.73	2.74
[illegible]	1.09	1.50	1.79	2.00	2.17	2.30	2.39	2.45	2.49	2.50
350	1.01	1.39	1.66	1.85	2.01	2.12	2.21	2.27	2.31	2.32
[illegible]	0.94	1.30	1.55	1.73	1.88	1.99	2.07	2.12	2.16	2.17
[illegible]	0.89	1.23	1.46	1.63	1.77	1.87	1.95	2.00	2.03	2.04
[illegible]	0.84	1.16	1.38	1.55	1.68	1.78	1.85	1.90	1.93	1.94
[illegible]	0.77	1.06	1.26	1.42	1.53	1.62	1.69	1.73	1.76	1.77
[illegible]	0.71	0.98	1.17	1.31	1.42	1.50	1.56	1.60	1.63	1.64
[illegible]	0.67	0.92	1.09	1.23	1.33	1.40	1.46	1.50	1.52	1.53
[illegible]	0.63	0.87	1.03	1.16	1.25	1.32	1.38	1.41	1.44	1.44
[illegible]	0.60	0.82	0.98	1.10	1.19	1.26	1.31	1.34	1.36	1.37
[illegible]	0.49	0.67	0.80	0.89	0.97	1.03	1.07	1.10	1.11	1.12
[illegible]	0.42	0.58	0.69	0.77	0.84	0.89	0.92	0.95	0.96	0.97
[illegible]	0.38	0.52	0.62	0.69	0.75	0.79	0.83	0.85	0.86	0.87
[illegible]	0.34	0.47	0.56	0.63	0.68	0.72	0.75	0.77	0.79	0.79
[illegible]	0.32	0.44	0.52	0.59	0.63	0.67	0.70	0.72	0.73	0.73
[illegible]	0.30	0.41	0.49	0.55	0.59	0.63	0.65	0.67	0.68	0.68

TABLE 5

ESTIMATES OF STANDARD ERRORS FOR P-VALUES
WHEN SAMPLING FRACTIONS ARE

.30 to .39

If the sample size n= [redacted] and the percent correct

(p-value) is computed to be [redacted]

n	5% or 95%	10% or 90%	15% or 85%	20% or 80%	25% or 75%	30% or 70%	35% or 65%	40% or 60%	45% or 55%	50%
	one standard error equals:									
100	1.77	2.43	2.89	3.24	3.51	3.71	3.86	3.97	4.03	4.05
150	1.44	1.98	2.36	2.64	2.86	3.03	3.15	3.24	3.29	3.30
200	1.25	1.71	2.04	2.29	2.47	2.62	2.73	2.80	2.84	2.86
250	1.11	1.53	1.82	2.04	2.21	2.34	2.44	2.50	2.54	2.55
300	1.02	1.40	1.66	1.87	2.02	2.14	2.22	2.28	2.32	2.33
350	0.94	1.29	1.54	1.73	1.87	1.98	2.06	2.11	2.15	2.16
400	0.88	1.21	1.44	1.61	1.75	1.85	1.93	1.98	2.01	2.02
450	0.83	1.14	1.36	1.52	1.65	1.74	1.81	1.86	1.89	1.90
500	0.79	1.08	1.29	1.44	1.56	1.65	1.72	1.77	1.80	1.80
550	0.72	0.99	1.18	1.32	1.43	1.51	1.57	1.61	1.64	1.65
700	0.66	0.91	1.09	1.22	1.32	1.40	1.45	1.49	1.52	1.52
800	0.62	0.86	1.02	1.14	1.24	1.31	1.36	1.40	1.42	1.43
900	0.59	0.81	0.96	1.08	1.16	1.23	1.28	1.32	1.34	1.34
1000	0.56	0.77	0.91	1.02	1.10	1.17	1.22	1.25	1.27	1.28
1500	0.45	0.62	0.74	0.83	0.90	0.95	0.99	1.02	1.04	1.04
2000	0.39	0.54	0.64	0.72	0.78	0.83	0.86	0.88	0.90	0.90
2500	0.35	0.48	0.58	0.65	0.70	0.74	0.77	0.79	0.80	0.81
3000	0.32	0.44	0.53	0.59	0.64	0.67	0.70	0.72	0.73	0.74
3500	0.30	0.41	0.49	0.55	0.59	0.62	0.65	0.67	0.68	0.68
4000	0.28	0.38	0.46	0.51	0.55	0.58	0.61	0.62	0.63	0.64

TABLE 6

ESTIMATES OF STANDARD ERRORS FOR P-VALUES
WHEN SAMPLING FRACTIONS ARE

.40 to .49

If the sample size n= [redacted] and the percent correct

(p-value) is computed to be [redacted]

one standard error equals:

n	5% or 95%	10% or 90%	15% or 85%	20% or 80%	25% or 75%	30% or 70%	35% or 65%	40% or 60%	45% or 55%	50%
[redacted]	1.62	2.24	2.66	2.98	3.23	3.42	3.56	3.65	3.71	3.73
[redacted]	1.32	1.82	2.17	2.43	2.63	2.78	2.90	2.98	3.02	3.04
[redacted]	1.15	1.58	1.88	2.10	2.28	2.41	2.51	2.58	2.62	2.63
[redacted]	1.02	1.41	1.68	1.88	2.04	2.15	2.24	2.30	2.34	2.35
[redacted]	0.93	1.29	1.53	1.72	1.86	1.97	2.05	2.10	2.13	2.14
[redacted]	0.87	1.19	1.42	1.59	1.72	1.82	1.89	1.94	1.97	1.98
[redacted]	0.81	1.11	1.33	1.49	1.61	1.70	1.77	1.82	1.85	1.86
[redacted]	0.76	1.05	1.25	1.40	1.52	1.60	1.67	1.71	1.74	1.75
[redacted]	0.72	1.00	1.19	1.33	1.44	1.52	1.58	1.63	1.65	1.66
[redacted]	0.66	0.91	1.08	1.21	1.31	1.39	1.45	1.48	1.51	1.52
[redacted]	0.61	0.84	1.00	1.12	1.21	1.29	1.34	1.37	1.40	1.40
[redacted]	0.57	0.79	0.94	1.05	1.14	1.20	1.25	1.29	1.31	1.31
[redacted]	0.54	0.74	0.88	0.99	1.07	1.13	1.18	1.21	1.23	1.24
[redacted]	0.51	0.70	0.84	0.94	1.02	1.08	1.12	1.15	1.17	1.17
[redacted]	0.42	0.57	0.68	0.77	0.83	0.88	0.91	0.94	0.95	0.96
[redacted]	0.36	0.50	0.59	0.66	0.72	0.76	0.79	0.81	0.83	0.83
[redacted]	0.32	0.45	0.53	0.59	0.64	0.68	0.71	0.73	0.74	0.74
[redacted]	0.30	0.41	0.48	0.54	0.59	0.62	0.65	0.66	0.67	0.68
[redacted]	0.27	0.38	0.45	0.50	0.54	0.57	0.60	0.61	0.62	0.63
[redacted]	0.26	0.35	0.42	0.47	0.51	0.54	0.56	0.57	0.58	0.59

TABLE 7

ESTIMATES OF STANDARD ERRORS FOR P-VALUES
WHEN SAMPLING FRACTIONS ARE

.50 to .59

If the sample size n= [redacted] and the percent correct

(p-value) is computed to be [redacted]

n	5% or 95%	10% or 90%	15% or 85%	20% or 80%	25% or 75%	30% or 70%	35% or 65%	40% or 60%	45% or 55%	50%
	one standard error equals									
[redacted]	1.47	2.02	2.41	2.70	2.92	3.09	3.22	3.30	3.35	3.37
[redacted]	1.20	1.65	1.96	2.20	2.38	2.52	2.62	2.69	2.73	2.75
[redacted]	1.04	1.43	1.70	1.90	2.06	2.18	2.27	2.33	2.37	2.38
[redacted]	0.93	1.28	1.52	1.70	1.84	1.95	2.03	2.08	2.11	2.13
[redacted]	0.85	1.16	1.39	1.55	1.68	1.78	1.85	1.90	1.93	1.94
[redacted]	0.78	1.08	1.28	1.44	1.55	1.65	1.71	1.76	1.79	1.80
[redacted]	0.73	1.01	1.20	1.34	1.45	1.54	1.60	1.65	1.67	1.68
[redacted]	0.69	0.95	1.13	1.27	1.37	1.45	1.51	1.55	1.57	1.58
[redacted]	0.65	0.90	1.07	1.20	1.30	1.38	1.43	1.47	1.49	1.50
[redacted]	0.60	0.82	0.98	1.10	1.19	1.26	1.31	1.34	1.36	1.37
[redacted]	0.55	0.76	0.91	1.01	1.10	1.16	1.21	1.24	1.26	1.27
[redacted]	0.52	0.71	0.85	0.95	1.03	1.09	1.13	1.16	1.18	1.19
[redacted]	0.49	0.67	0.80	0.89	0.97	1.03	1.07	1.10	1.11	1.12
[redacted]	0.46	0.64	0.76	0.85	0.92	0.97	1.01	1.04	1.06	1.06
[redacted]	0.38	0.52	0.62	0.69	0.75	0.79	0.83	0.85	0.86	0.87
[redacted]	0.33	0.45	0.54	0.60	0.65	0.69	0.72	0.74	0.75	0.75
[redacted]	0.29	0.40	0.48	0.54	0.58	0.61	0.64	0.66	0.67	0.67
[redacted]	0.27	0.37	0.44	0.49	0.53	0.56	0.58	0.60	0.61	0.61
[redacted]	0.25	0.34	0.40	0.45	0.49	0.52	0.54	0.56	0.56	0.57
[redacted]	0.23	0.32	0.38	0.42	0.46	0.49	0.51	0.52	0.53	0.53

TABLE 8

ESTIMATES OF STANDARD ERRORS FOR P-VALUES
WHEN SAMPLING FRACTIONS ARE

.60 to .69

If the sample size n= [redacted] and the percent correct

(p-value) is computed to be [redacted]

n	5% or 95%	10% or 90%	15% or 85%	20% or 80%	25% or 75%	30% or 70%	35% or 65%	40% or 60%	45% or 55%	50%
	one standard error equals:									
[redacted]	1.30	1.78	2.12	2.38	2.57	2.72	2.84	2.91	2.96	2.97
[redacted]	1.06	1.45	1.73	1.94	2.10	2.22	2.31	2.37	2.41	2.42
[redacted]	0.91	1.26	1.50	1.68	1.82	1.92	2.00	2.05	2.09	2.10
[redacted]	0.82	1.12	1.34	1.50	1.62	1.72	1.79	1.84	1.87	1.87
[redacted]	0.75	1.03	1.22	1.37	1.48	1.57	1.63	1.68	1.70	1.71
[redacted]	0.69	0.95	1.13	1.27	1.37	1.45	1.51	1.55	1.58	1.58
[redacted]	0.65	0.89	1.06	1.18	1.28	1.36	1.41	1.45	1.47	1.48
[redacted]	0.61	0.84	1.00	1.12	1.21	1.28	1.33	1.37	1.39	1.40
[redacted]	0.58	0.79	0.95	1.06	1.15	1.21	1.26	1.30	1.32	1.32
[redacted]	0.53	0.73	0.86	0.97	1.05	1.11	1.15	1.18	1.20	1.21
[redacted]	0.49	0.67	0.80	0.90	0.97	1.03	1.07	1.10	1.11	1.12
[redacted]	0.46	0.63	0.75	0.84	0.91	0.96	1.00	1.03	1.04	1.05
[redacted]	0.43	0.59	0.70	0.79	0.85	0.90	0.94	0.97	0.98	0.99
[redacted]	0.41	0.56	0.67	0.75	0.81	0.86	0.89	0.92	0.93	0.94
[redacted]	0.33	0.46	0.55	0.61	0.66	0.70	0.73	0.75	0.76	0.76
[redacted]	0.29	0.40	0.47	0.53	0.57	0.61	0.63	0.65	0.66	0.66
[redacted]	0.26	0.36	0.42	0.47	0.51	0.54	0.56	0.58	0.59	0.59
[redacted]	0.24	0.32	0.39	0.43	0.47	0.50	0.52	0.53	0.54	0.54
[redacted]	0.22	0.30	0.36	0.40	0.43	0.46	0.48	0.49	0.50	0.50
[redacted]	0.20	0.28	0.33	0.37	0.41	0.43	0.45	0.46	0.47	0.47

TABLE 9

ESTIMATES OF STANDARD ERRORS FOR P-VALUES
WHEN SAMPLING FRACTIONS ARE

.70 to .79

If the sample size n= [redacted] and the percent correct (p-value) is computed to be [redacted]

n	5% or 95%	10% or 90%	15% or 85%	20% or 80%	25% or 75%	30% or 70%	35% or 65%	40% or 60%	45% or 55%	50%
	one standard error equals:									
100	1.10	1.51	1.79	2.01	2.18	2.30	2.40	2.46	2.50	2.51
150	0.89	1.23	1.46	1.64	1.77	1.88	1.95	2.01	2.04	2.05
200	0.77	1.06	1.27	1.42	1.53	1.62	1.69	1.74	1.76	1.77
250	0.69	0.95	1.13	1.27	1.37	1.45	1.51	1.55	1.58	1.58
300	0.63	0.87	1.03	1.16	1.25	1.33	1.38	1.42	1.44	1.45
350	0.58	0.80	0.96	1.07	1.16	1.23	1.28	1.31	1.33	1.34
400	0.55	0.75	0.89	1.00	1.08	1.15	1.19	1.23	1.25	1.25
450	0.51	0.71	0.84	0.94	1.02	1.08	1.13	1.16	1.17	1.18
500	0.49	0.67	0.80	0.90	0.97	1.03	1.07	1.10	1.11	1.12
550	0.45	0.61	0.73	0.82	0.88	0.94	0.97	1.00	1.02	1.02
700	0.41	0.57	0.68	0.76	0.82	0.87	0.90	0.93	0.94	0.95
800	0.39	0.53	0.63	0.71	0.77	0.81	0.84	0.87	0.88	0.88
900	0.36	0.50	0.60	0.67	0.72	0.76	0.80	0.82	0.83	0.83
1000	0.34	0.47	0.56	0.63	0.68	0.72	0.75	0.77	0.79	0.79
1500	0.28	0.39	0.46	0.52	0.56	0.59	0.62	0.63	0.64	0.65
2000	0.24	0.34	0.40	0.45	0.48	0.51	0.53	0.55	0.56	0.56
2500	0.22	0.30	0.36	0.40	0.43	0.46	0.48	0.49	0.50	0.50
3000	0.20	0.27	0.33	0.37	0.40	0.42	0.44	0.45	0.45	0.46
3500	0.18	0.25	0.30	0.34	0.37	0.39	0.40	0.41	0.42	0.42
4000	0.17	0.24	0.28	0.32	0.34	0.36	0.38	0.39	0.39	0.40

APPENDIX B

SCORING GUIDES FOR QUESTION 12

This open-ended question asked for three responses concerning, "What could a person in your community try to do if there were a local law which he considered unjust?" The following scoring guide was used by NAEP. Should you decide to hand score this question in order to make comparisons between your students and the national sample, you will need to follow the scoring guide.

Note that three responses were solicited from each student. While some students will write three responses, others may only write one or two responses and some students will write none. The major scoring categories used by NAEP to categorize each response are printed in capital letters in the guide. The scorers read each student's response and assigned it to a scoring category. They then recorded the three digit code number (preceding the category) directly in the assessment booklet. The three sets of ovals at the bottom of page 15 were used by NAEP but you could write the codes next to each response.

NAEP scored each student response as either acceptable, unacceptable, no response or "I don't know". Note that the code numbers for all acceptable response categories begin with a "1", all unacceptable response categories begin with a "2", an "I don't know" response is coded "399" and a no response is coded "000".

Each student booklet should receive three sets of code numbers. Assume that a student only gives one response. The scorer would categorize that response and then assign two sets of "000" codes.

The "I don't know" code (399) should be used only if the student wrote this response in the booklet.

To receive an acceptable response to Question 12, a student must mention at least two different acceptable scoring categories. For example, a student may give three reasons, but if they all are scored as category 114 -- LEGAL ACTION (COURT ACTION), SUE the student would not receive an overall acceptable score for the question. If a student mentioned two acceptable reasons (111 and 113) and one unacceptable reason (251), the student would receive an acceptable score for the question since at least two different acceptable reasons were given.

Beneath each major scoring category are samples of actual student responses that were scored during the NAEP 13- and 17-year-old assessment. These sample responses should help to show how NAEP scored various student responses.

It is very important that all scorers be completely familiar with the scoring guide and that scores be assigned in a consistant manner. The following training procedure is suggested to obtain consistent scoring among your scoring staff:

- One person should be designated as the "chief" scorer. This person will be responsible for training the other scorers and supervising the scoring task.

- The chief scorer, and perhaps one other scorer, should select a sample of student responses. Reproduce (or type)

several copies of these responses because they will be used to train other scorers later on.

- The two scorers should first review the scoring guide and then begin to score the sample responses. Any differences in scores should be thoroughly discussed and reconciled. The purpose of this pre-scoring session is to become very familiar with the scoring guide and to reach agreement on the scores assigned.

- If other scorers are used, they should first review the scoring guide. Distribute the sets of sample student responses (without scores assigned) and let each scorer work individually. After a third to a half of the sample responses have been scored by everyone, compare the scores to see if any differences appear. (The chief scorer should refer to the papers that were scored during the pre-scoring session to provide scoring rationales.)

- The chief scorer must serve as final arbitrator in settling score differences. When the scoring becomes consistent, you are ready to score the assessment booklets.

- The chief scorer should constantly monitor and check to be sure that all scorers are scoring accurately and consistently. Conduct retraining sessions as necessary, using the sets of sample responses.

Pkg. 9, Ex. 12

UNJUST LAW/COMMUNITY

SCORING GUIDE

Categories and sample responses are listed below.

000 = NO RESPONSE

110 = OTHER - RESPONSES THAT ARE ACCEPTABLE BUT DO NOT HAVE AN ESTABLISHED CATEGORY AND ACCEPTABLE RESPONSES THAT ARE TOO VAGUE TO CATEGORIZE

Age 13 Try to stop that law and get rid of it.
Try to have it changed.
Ask the police about changing it.
He could suggest a better law in its place.
They could suggest changes in the law.
Prove it unjust.
Age 17 Complain.
Criticize.

111 = PETITION - CIRCULATE OR SIGN

Age 13 He could write up a petition and have people in the community sign it then take it to court.
Right a petition.
Take a peition around to withdraw the law.
He could get a patishion signed by the community people.
Age 17 If you didn't like the way things are get up a petition.
Starting peition if necessary.

112 = CIRCULATE PAMPHLETS, BUMPER STICKERS, BILLBOARDS, POSTERS, BUTTONS

Age 13 Work for idea i.e., pass pamphlets.
Age 17 Work for idea ie pass pamphlets.

Pkg. 9, Ex. 12

Categories and sample responses are listed below.

113 = DEMONSTRATE, PROTEST, PICKET, CIVIL DISOBEDIENCE (AN ORGANIZED GROUP ACTIVITY OR SPECIFIES THEY WOULD DISOBEY THE RULE TO MAKE A POINT)

Age 13 Have a strike against it.
He could get a permit to picket.
That person could protest.
Get a lot of people together and they would block some official building so people couldn't get in our out
He could make signs and protest it.
Test case, break the law and bring it to court and try to prove that it is unconstitional.

Age 17 Demonstrate.
As a last resort you could strike.

114 = LEGAL ACTION (COURT ACTION), SUE

Age 13 Go to court
If he thought it was unconstitititional he could take it to court.
He could bring the laws to the Supreme court of the US and let the nine cheif justice decide.
The person could ask for an appeal for the law.
File a complaint.
They could sue em.

Age 17 No samples.

115 = USE THE MASS MEDIA - APPEAR ON OR WRITE TO THE RADIO, THE TELEVISION; WRITE TO THE NEWSPAPERS

Age 13 He could write a letter to the editor of his newspaper to protest it.
Write to newspapers to have everyone know about it.
Write about it in the newspaper.

Age 17 Use mass media.
Write a letter to editor of newspapers.

Pkg. 9, Ex. 12

Categories and sample responses are listed below.

116 = USE/THREATEN TO USE THE ELECTION PROCESS - VOTE (INCLUDES CONDITIONAL "IF"), RECALL, REFERENDUM, CAMPAIGN, RUN FOR OFFICE

Age 13 Try to have it voted on again.
He could ask a friend to try to run for Mayor or something to try to change the law.
Not to vote for it next time.
Ask the mayor to have the city vote on it, and if it wasn't passed it couldn't be enforced.
He or she could demand to have a vote or a revote on a law.

Age 17 By voting, making suggestions to authorities.
Being active in campaigns for local offices.

117 = JOIN OR FORM A GROUP, LOBBY, JOIN A POLITICAL PARTY (DOES NOT INCLUDE SPECIFIC REFERENCES TO ELECTION ACTIVITIES)

Age 13 Try to form a committee of people to help pass a new one.

Age 17 Form a committee.
Join the party and work.

118 = ONLY GIVES A GENERAL METHOD OF INFLUENCING

Age 13 He could speak out against it.
Report it to someone.
Send a letter about what he thinks is right.
Go to the meeting and say he didn't like it.

Age 17 Write letters.
Speak out.
Attend meetings.

Pkg. 9, Ex. 12

Categories and sample responses are listed below.

119 = WRITE TO, SPEAK TO, GET IN TOUCH WITH REPRESENTATIVE, SENATOR, OTHER ELECTED OFFICIAL; INCLUDES GENERAL REFERENCE TO GETTING IN TOUCH WITH SOMEONE HIGHER UP, SOMEONE IN AUTHORITY (ASSUME 'WRITE TO THEM' AND 'TALK TO THEM' IN THIS CATEGORY UNLESS FURTHER EXPLAINED)

Age 13 Write his congressman and tell his feelings.
He could talk to the people who passed it and tell them he doesn't agree with it.
Tell the city council if he had other people agreeing with him.
He could go to the mayor and tell him what he thinks.
He could write a letter or tell the people to write letter to congess.
Go to the county seat.

Age 17 If you write to them enough.
Talk to them.
Write to them.
Speak to them.

120 = TALK TO, WRITE TO, GET IN TOUCH WITH OTHER PEOPLE, DISCUSS THE SITUATION, FIND OUT WHAT OTHER PEOPLE THINK, MEET WITH OTHER PEOPLE

Age 13 Tell the people he doesn't think its fair.
Get some friends to help him fight it.
Speak out and tell other people about it and ask them to help.
Ask some opinions of other people about what they think about it.
Make the neighborhood get together and try to see what they think about the subject.

Age 17 Talk to people (assume public).
Speaking with parents.

121 = GENERAL REFERENCES TO GETTING INFORMATION, BECOMING INFORMED/KNOWLEDGEABLE, READING UP ON THE SITUATION

Age 13 Look and find out how it could be made just.

Age 17 No samples.

Pkg. 9, Ex. 12

Categories and sample responses are listed below.

122 = INFLUENCE THROUGH TAKING ADVANTAGE OF POLITICAL FRIENDSHIPS

Age 13 My Daddy is on the city council. I know the mayor and chief of police.
Age 17 You see this very plainly in the precinct where the captain can help you in exchange for your vote.
My Daddy is on the city council. I know the mayor and chief of police.

123 = ATTEND CITY COUNCIL, COUNTY COMMISSIONER MEETINGS

Age 13 He could come to a council meeting and protest.
They could bring up their passion in a city council meeting.
Age 17 When I grow up--If they have a meeting I could go and tell them my opinion.

250 = OTHER - VAGUE OR NONSENSICAL RESPONSES AND OTHER UNACCEPTABLES THAT DO NOT HAVE AN ESTABLISHED CATEGORY

Age 13 Move out of the State.
He could move to a different community.
Better streets and alleys.
Better schools.
More laws.
He could tear it up.
Try to do something about it.
Age 17 No samples.

Pkg. 9, Ex. 12

Categories and sample responses are listed below.

251 = BRIBE, OFFER MONEY

Age 13 No samples.
Age 17 No samples.

252 = REFERENCES TO DISOBEYING THE LAW, RIOTING, USING VIOLENCE

Age 13 Get a group of people and have a riot and beat some heads together.
He would protest in a violent way.
Do not do what the law said.
Break them.
Age 17 No samples.

253 = USE INTIMIDATION

Age 13 No samples.
Age 17 No samples.

254 = COMPLYING RATHER THAN CHANGING; INCLUDES DOING NOTHING; OBEY IT

Age 13 They could just let it go.
Try to live with it.
Try to abide by the law the best that he knew how.
Try to make the best of it.
Or he might not do anything about it.
Age 17 No samples.

255 = NOTHING CAN BE DONE

Age 13 Nothing that I know of.
Age 17 No samples.

399 = I DON'T KNOW

APPENDIX C

LISTING OF ASSESSMENT QUESTIONS,
CORRECT ANSWERS, THEMES AND OBJECTIVES

This appendix provides information that will be important for your scoring and analysis tasks. Each column is explained below:

Columns A and B

A sequential listing of question numbers for the 13- and 17-year-old booklets is shown in columns A and B. Note that most questions in the two booklets are identical. However, questions 30B, 31 A & B, and 32A, B, C & D in the 17-year-old booklet do not appear in the 13-year-old booklet.

Column C

The correct (acceptable) answer for each question is shown in column C. For multiple-part questions (A, B, C, etc.), NAEP will report the percent of students who correctly answered each individual part.

Note that for some multiple-part questions, students have to correctly answer two or more of the parts in order to receive an overall acceptable score for the question. For example, look at question 2 which has parts A, B and C. Only those students who correctly answer all three parts would receive an acceptable score for the entire question. (Questions 2, 4, 12 and 16 should be scored according to the notations in column C.).

For several questions, primarily the attitudinal questions, the answer which is shown may be viewed as "desirable" rather than correct or acceptable.

For some questions, more than one response choice may be scored as correct. In question 3 , for example, both the "yes" and the "I don't know" response choices are considered to be acceptable.

Column D

The theme membership for each question is shown in column D. If you plan to analyze your results by theme, you will need to compute a mean p-value for each of the four themes (see Chapter 11). The four themes are: Political Attitudes, Political Education, Political Knowledge and Social Attitudes.

Column E

The citizenship objectives are coded in column E. While NAEP will not be computing mean p-values for the objectives, this information is provided should you want to do so. Keep in mind that the survey booklet you are using is only one of several booklets that was assessed by NAEP during 1975-76. Therefore, the survey coverage by themes or objectives should not be considered as a full-scale citizenship assessment.

Those questions noted as "Background" in column E were designed to gather curriculum related information in order to address educators' concerns about whether students with

different levels of exposure to or interest in citizenship issues would exhibit different levels of performance. NAEP plans to report student performance using some of the background questions as reporting variables. Since these reporting plans have not been finalized at this time, more information will be provided in the data reports.

LISTING OF ASSESSMENT QUESTIONS,
CORRECT ANSWERS, THEMES AND OBJECTIVES

(A) 13-Year-Old Question No.	(B) 17-Year-Old Question No.	(C) Correct Answer	(D) Theme	(E) Objective
1	1	The right to determine who can purchase and live in the house next door	Political Knowledge	II B
2 A	2 A	Yes	Political Knowledge	II A
B	B	Yes	Political Knowledge	II A
C	C	Yes	Political Knowledge	II A
		NOTE: For acceptable response to question 2, student must correctly answer all three parts.		
3 A	3 A	Yes; I don't know	Social Attitudes	I A
B	B	Yes; I don't know	Social Attitudes	I A
C	C	Yes; I don't know	Social Attitudes	I A
		NOTE: Both response choices scored as correct.		

(A) 13-Year-Old Question No.	(B) 17-Year-Old Question No.	(C) Correct Answer	(D) Theme	(E) Objective
4 A	4 A	Yes	Political Attitudes	IV C & D
B	B	Yes	Political Attitudes	IV C & D
C	C	Yes	Political Attitudes	IV C & D
D	D	Yes	Political Attitudes	IV C & D
E	E	Yes	Political Attitudes	IV C & D
		NOTE: For acceptable response to question 4, student must correctly answer any two of the five parts.		
5 A	5 A	No	Political Knowledge	III D
B	B	Yes	Political Knowledge	III D
6 A	6 A	No	Social Attitudes	I E
B	B	No	Social Attitudes	I E
C	C	Yes	Social Attitudes	I E
D	D	No	Social Attitudes	I E
E	E	No	Social Attitudes	I E

(A) 13-Year-Old Question No.	(B) 17-Year-Old Question No.	(C) Correct Answer	(D) Theme	(E) Objective
7 A	7 A	No	Political Knowledge	III B
B	B	Yes	Political Knowledge	III B
C	C	Yes	Political Knowledge	III B
8 A	8 A	No	Political Knowledge	V A
B	B	No	Political Knowledge	V A
C	C	Yes	Political Knowledge	V A
9 A	9 A	Yes	Political Knowledge	III B
B	B	No	Political Knowledge	II B
C	C	No	Political Knowledge	II B
10 A	10 A	True about me	Political Attitudes	IV A
B	B	True about me	Political Attitudes	IV A
C	C	True about me	Political Attitudes	IV A
11 A	11 A	No	Political Knowledge	III B
B	B	Yes	Political Knowledge	III B
C	C	Yes	Political Knowledge	III B
12	12	See Appendix B for scoring keys and guides.	Political Knowledge	II C

(A) 13-Year-Old Question No.	(B) 17-Year-Old Question No.	(C) Correct Answer	(D) Theme	(E) Objective
13	13	No, because he is protected by an amendment to the Constitution.	Political Knowledge	II B
14 A	14 A	2	Political Knowledge	III B
B	B	It varies with the population of the state.	Political Knowledge	III B
15 A	15 A	I wouldn't be able to say one way or the other if the person could be trusted.	Social Attitudes	I A
B	B	I wouldn't be able to say one way or the other if the person could be trusted.	Social Attitudes	I A
C	C	I wouldn't be able to say one way or the other if the person could be trusted.	Social Attitudes	I A
16 A	16 A	Disagree	Political Attitudes	III F
B	B	Agree	Political Attitudes	III F
C	C	Disagree	Political Attitudes	II B
		NOTE: Question 16 should be scored in two parts. For an acceptable response to the first part, student must correctly answer <u>both</u> Part A and B. For an acceptable response to the second part, student must correctly answer Part C.		

(A) 13-Year-Old Question No.	(B) 17-Year-Old Question No.	(C) Correct Answer	(D) Theme	(E) Objective
17	17	To determine guilt or innocence	Political Knowledge	II B
18 A	18 A	NOTE: Consultants have advised NAEP not to report results. Historians disagree on the validity of the question.		
B	B			
19 A	19 A	Yes	Political Knowledge	II B
B	B	Yes	Political Knowledge	II B
C	C	No	Political Knowledge	II B
D	D	Yes	Political Knowledge	II B
E	E	No	Political Knowledge	II B
20	20	The family should be able to move in; skin color shouldn't make any difference.	Social Attitudes	I E
21	21	False	Political Knowledge	III E
22 A	22 A	No	Political Attitudes	II B
B	B	No	Political Attitudes	II B
C	C	No	Political Attitudes	II B

(A) 13-Year-Old Question No.	(B) 17-Year-Old Question No.	(C) Correct Answer	(D) Theme	(E) Objective
23 A	23 A	No	Political Knowledge	II B
B	B	No	Political Attitudes	II B
24 A	24 A	No	Political Knowledge	V A
B	B	No	Political Knowledge	V A
C	C	No	Political Knowledge	V A
25 A	25 A	Yes	Political Knowledge	III B
B	B	Yes	Political Attitudes	II F
26	26	Refuse to provide money for further military action	Political Knowledge	III B
27	27	Try to stop the fight myself; Look for a teacher or principal to stop the fight NOTE: Both response choices scored as correct.	Social Attitudes	IV A
28 A	28 A	No	Political Attitudes	III E
B	B	No	Political Knowledge	II B

(A) 13-Year-Old Question No.	(B) 17-Year-Old Question No.	(C) Correct Answer	(D) Theme	(E) Objective
29 A	29 A	Almost every day; Once or twice a week; Three or four times a month	Political Education	Background
B	B	Almost every day; Once or twice a week; Three or four times a month NOTE: All three response choices scored as correct.	Political Education	Background
30	30 A	1 or 2; 3 or 4; 5 or more	Political Education	Background
--	B	A good deal; Some NOTE: In Part A, all three response choices scored as correct. In Part B, both response choices scored as correct.	Political Education	IV A
--	31 A	A good deal; Some	Political Education	Background
--	B	A good deal; Some NOTE: Both response choices scored as correct.	Political Education	Background
--	32 A	True about the courses; Somewhat true about the courses	Political Education	Background
--	B	True about the courses; Somewhat true about the courses	Political Education	Background
--	C	Not true about the courses	Political Education	Background
--	D	True about the courses; Somewhat true about the courses NOTE: Both response choices scored as correct for Parts A, B and D.	Political Education	Background

(A) 13-Year-Old Question No.	(B) 17-Year-Old Question No.	(C) Correct Answer	(D) Theme	(E) Objective
31 A	33 A	Always; Often; Sometimes	Political Education	Background
B	B	Always; Often; Sometimes	Political Education	Background
C	C	Always; Often; Sometimes	Political Education	Background
D	D	Always; Often; Sometimes	Political Education	Background
E	E	Always; Often; Sometimes NOTE: All three response choices scored as correct.	Political Education	Background

APPENDIX D

CITIZENSHIP OBJECTIVES

The seven major citizenship objectives that were developed for NAEP's 1975-76 assessment program are shown below. Keep in mind that the assessment kit booklet is only one of several booklets that was assessed by NAEP for the citizenship assessment. Since the questions in the survey booklet represent only a portion of the entire citizenship assessment, NAEP will not be reporting mean p-values by objective.

Subobjectives also are shown beneath each major objective area. A listing of the survey questions and their categorization by objective and subobjective is shown in Appendix C. This information is provided should you want to analyze your results for any of the citizenship objectives.

I. SHOW CONCERN FOR THE WELL-BEING AND DIGNITY OF OTHERS.

- A. Treat others with respect.
- B. Consider the consequences for others of their own actions.
- C. Guard safety and health of others.
- D. Offer help to others in need.
- E. Support equal opportunity in education, housing, employment, and recreation.
- F. Are loyal to country, to friends, and to other groups whose values they share.
- G. Are ethical and dependable in work, school, and social situations.

II. SUPPORT JUST LAW AND THE RIGHTS OF ALL INDIVIDUALS.

A. Understand the need for law.
B. Recognize specific constitutional rights and liberties.
C. Defend rights and liberties of all kinds of people.
D. Encourage ethical and lawful behavior in others.
E. Comply with public laws.
F. Oppose unjust rules, laws, and authority by lawful means.

III. KNOW THE MAIN STRUCTURE AND FUNCTIONS OF THEIR GOVERNMENTS.

A. Recognize basic governmental purposes.
B. Understand the organization of federal and state governments.
C. Know the political structure of their local community.
D. Recognize the relationships of different levels of government.
E. Recognize the importance of political opposition and interest groups.
F. Recognize that democracy depends on the alertness and involvement of its citizens, and know how citizens can affect government.
G. Know structure of school and student government.

IV. PARTICIPATE IN DEMOCRATIC CIVIC IMPROVEMENT.

A. Believe that each person's civic behavior is important, and convey this belief to others.
B. Favor organized civic action where it is needed.
C. Actively work for civic improvement.
D. Participate in local, state, and national governmental processes.
E. Apply democratic procedures effectively in small groups.

V. UNDERSTAND IMPORTANT WORLD, NATIONAL AND LOCAL CIVIC PROBLEMS.

A. Understand social conflict among individuals, groups, and nations and the difficulties in achieving peace and social harmony.
B. Recognize how different civic policies may affect people's efforts to meet their economic needs.

C. Recognize major environmental problems and are aware of alternative civic solutions.
D. See relations among civic problems and particular events.
E. Generate good ideas about causes and solutions for civic problems.

VI. APPROACH CIVIC DECISIONS RATIONALLY.

A. Seek relevant information and alternative viewpoints on important civic decisions.
B. Evaluate civic communications and actions carefully as a basis for forming and changing their own views.
C. Plan and organize civic tasks effectively.
D. Support open, honest communication and universal education.

VII. HELP AND RESPECT THEIR OWN FAMILIES.

A. Cooperate in home responsibilities and help provide for other family members.
B. Instill civic values and skills in other family members.

APPENDIX E

DEFINITIONS OF NATIONAL ASSESSMENT REPORTING GROUPS

Geographic Regions*

NORTHEAST	SOUTHEAST
Connecticut	Alabama
Delaware	Arkansas
District of Columbia	Florida
Maine	Georgia
Maryland	Kentucky
Massachusetts	Louisiana
New Hampshire	Mississippi
New Jersey	North Carolina
New York	South Carolina
Pennsylvania	Tennessee
Rhode Island	Virginia
Vermont	West Virginia
CENTRAL	**WEST**
Illinois	Alaska
Indiana	Arizona
Iowa	California
Kansas	Colorado
Michigan	Hawaii
Minnesota	Idaho
Missouri	Montana
Nebraska	Nevada
North Dakota	New Mexico
Ohio	Oklahoma
South Dakota	Oregon
Wisconsin	Texas
	Utah
	Washington
	Wyoming

*These regional subpopulation definitions are the same as those used by the Office of Business Economics, Department of Commerce.

Sex

Results are reported separately for males and females.

Race

Results are reported for Whites and Blacks. While students were classified into other ethnic groups the actual sample sizes realized are insufficient for reporting purposes.

Parental Education

Parental education refers to the highest level of education reported by the student for either parent.

No High School -- Neither parent has any formal education beyond the eighth grade.

Some High School -- At least one parent has some formal education beyond the eighth grade, but neither parent has graduated from high school.

Graduated From High School -- At least one parent has graduated from high school, but neither parent has any formal education beyond high school.

Post High School -- At least one parent has some formal education beyond high school including any business, professional or trade school training as well as college or university training.

Size and Type of Community

Community types are identified both by the size of the community and by the type of employment of the majority of people in the community.

High-socioeconomic (Affluent) Urban. Areas in or around cities with a population greater than 200,000 where a high proportion of the residents are in professional or managerial positions.

Low-socioeconomic (Disadvantaged) Urban. Areas in or around cities with a population greater than 200,000 where a high proportion of the residents are on welfare or are not regularly employed.

Rural. Areas with a population under 10,000 where most of the residents are farmers or farm workers.

Urban Fringe. Communities within the metropolitan area of a city with a population greater then 200,000, outside city limits and not in the high- or low-socioeconomic urban groups.

Main Big City. Communities within the city limits of a city with a population over 200,000 and not included in the high- or low-socioeconomic urban groups.

Medium City. Cities with populations between 25,000 and 200,000.

Small Places. Communities with a population of less than 25,000 and not in the rural group.